TRANE

Odyssey™ Split Systems

Cooling, Heat Pump and Air Handling Units

Ingersoll Rand

Odyssey Split Systems are compact, flexible and easy on the budget.

Odyssey Split Systems are ideal for office buildings, hotels, schools, churches, municipal and industrial facilities. These air-cooled split systems are designed and tested to be flexible and dependable.

Trane provides greater application flexibility by allowing Odyssey units to be matched with alternate offerings within the Trane portfolio.

Outdoor Unit Compressor Options							
Tons	**6**	**7½**	**10**	**12½**	**15**	**20**	**25**
Cooling							
Single	X	X	X				
Dual			X	X	X	X	
Manifolded			X		X	X	X
Heat Pump							
Single	X	X	X				
Dual					X	X	
Indoor Unit Options							
Tons	**5**	**7½**	**10**	**12½**	**15**	**20**	**25**
Air Handler							
Single Circuit	X	X	X				
Dual Circuit	X	X	X	X	X	X	X

Odyssey: The next generation

Trane provides an unparalleled offering with its next generation Odyssey™ light commercial split systems line. Unlike typical split systems on the market, Odyssey offers easy servicing, built-in reliability, ease of installation and outstanding customer service.

- 8-12% increase in energy efficiency
- Safer for the environment
- Expanded system controls (ReliaTel™)
- Full rated capacity delivered at designed conditions

Flexible applications

Trane offers single, dual and manifolded compressor options, each with their own benefits. Single compressor outdoor units feature a single refrigeration circuitry, lowering job installation costs by requiring only one set of refrigerant lines.

Equally important, Odyssey offers single refrigerant circuit/capacity unloading models. The unloading units feature dual manifolded scroll compressors with two stages of capacity modulation and a single refrigeration circuit.

Dual compressor/dual circuit models give true stand-by protection - if one compressor fails, the second will automatically start-up. Also, the first compressor can be serviced without shutting down the unit since the refrigerant circuits are independent.

Dual compressor models also save on energy costs. During light load conditions, only one compressor will operate to save energy. On select

air handlers, a factory installed variable frequency drive (VFD) is available. These 2 speed and Single Zone VAV (SZVAV) solutions combined with condensing units that have multiple compressors provide increased part load performance (IEER) when conditions are not at the max design condition. Additionally, some states have adopted codes that require this type of performance.

Easy to install

Odyssey units are built with installation in mind. With a smaller footprint, the outdoor unit takes up less space and weighs less, making its installation more efficient and economical. Our indoor air handlers are built to be installed in confined spaces, fitting through standard doorways and freight elevators.

Built-in reliability

Our split systems stand apart from other manufacturers in quality, reliability and total value. We run-test our systems at the factory to ensure at installation they will function and operate as designed, giving you peace of mind.

Backed by our warranties,

Trane ensures your split system will function as needed, when needed - with no interruptions to comfort and your day-to-day business.

Easy to service

Designed for easy servicing, Odyssey units have standardized cabinets and components. Numbered and color-coded wiring may speed up service time.

Available when needed

Odyssey products are stocked in numerous warehouse locations to make it easy to ship a unit to you. Whether it's an emergency replacement for a unit that went down, a planned replacement or new construction, Odyssey will provide the right product, at the right place and at the right time.

Odyssey Split Systems exceed the Trane reputation for quality and reliability. A wide range of models allows you to select a system that will meet your particular comfort and building needs.

Cooling Units (60 Hz)

Model			TTA073D, TWE090D	TTA090D, TWE090D	TTA120D/E/F, TWE120D/E	TTA150E, TWE150E	TTA180E/F, TWE180E	TTA240E/F, TWE240E	TTA300F, TWE300E
Mode			Cooling	Cooling	Cooling	Cooling	Cooling	Cooling	Cooling
Power Supply		V/Hz/Ph	208/240V, 460, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph	208/240V, 460V, 575V/60Hz/3Ph
Capacity Range		MBh	77	94	124/122/123	154	185/186	263/254	307
Rated Capacity		MBh	75	92	120/119/120	150	180/180	254/246	292
EER / HSPF			11.2	11.2	11.2	11	11	10	10
IEER			13	12.2	12.2	13.7	12.9/12.5	10.9/11.9	11
Indoor	Dimension (H/W/D)	In	58.6" x 28.5" x 51"	58.6" x 28.5" x 51"	58.55" x 28.5" x 67"	73.7" x 31.25" x 83"	73.7" x 31.25" x 83"	76.53" x 33.75" x 95"	76.53" x 33.75" x 95"
	Net Weight	Lbs	232	323	393	676	675	818	899
	Filters	In	(3) 16 x 25 x 1	(3) 16 x 25 x 1	(4) 16 x 25 x 1	(8) 15 x 20 x 2	(8)15 x 20 x 2	(4) 16 x 25 x 2 (4) 16 x 20 x 2	(4) 16 x 25 x 2 (4) 16 x 20 x 2
Outdoor	Dimension (H/W/D)	In	43.54" x 43" x 36.5"	43.54" x 43" x 36.5"	43.49" x 53" x 40.5"	49.48" x 53.25" x 41"	49.48" x 94.75" x 47"	49.48" x 94.75" x 47"	55.48" x 94.75" x 47"
	Net Weight	Lbs	300	298	395/438/438	468	723/725	837/835	1037
	Refrigerant Field Charge	Lbs R-410A	15.7	17.6	22.5/24.8/21.2	30.7	39/37.6	43.8/41.3	62.5

Heat Pump Units (60 Hz)

Model			TWA073D, TWE090D		TWA090D, TWE090D		TWA120D, TWE120D		TWA180E, TWE180E		TWA240E, TWE240E	
Mode			Cooling	Heating (L/H)	Cooling	Heating (L/H)	Cooling	Heating (L/H)	Cooling	Heating (L/H)	Cooling	Heating (L/H)
Power Supply		V/Hz/Ph	208/240, 460, 575/60/3		208/240, 460, 575/60/3		208/240, 460, 575/60/3		208/240, 460, 575/60/3		208/240, 460, 575/60/3	
Capacity Range		MBh	80	40/69	93	49/82	123.8	75/105	185.6	109/174	255.1	134/236
Rated Capacity		MBh	78	-	90	-	120	-	180	-	246	-
EER / COP			11	3.3/2.3	11	3.3/2.3	11	3.3/2.2	10.6	3.2/2.3	10	3.2/2.0
Indoor	Dimension (H/W/D)	In	48 1/8 x 39 5/8 x 23 5/8		54 1/8 x 49 1/8 x 26 1/2		54 1/8 x 65 1/8 x 26 1/2		69 1/8 x 81 1/4 x 30		71 5/8 x 94 1/4 x 32 1/8	
	Net Weight	Lbs	232		323		393		675		818	
	Filters	In	(3) 16 x 25 x 1		(3) 16 x 25 x 1		(4) 16 x 25 x 1		(8)15 x 20 x 2		(4) 16 x 25 x 2 (4)16 x 20 x 2	
Outdoor	Dimension (H/W/D)	In	39 1/8 x 42 1/8 x 36		39 1/8 x 42 1/8 x 36		45 1/8 x 52 1/8 x 40		45 1/8 x 95 1/2 x 45 7/8		45 1/8 x 95 1/2 x 45 7/8	
	Net Weight	Lbs	328		340		438		765		848	
	Refrigerant Field Charge	Lbs R-410A	20.4		20.6		27.9		47.1		47	

Ingersoll Rand

Ingersoll Rand (NYSE:IR) is a world leader in creating and sustaining safe, comfortable and efficient environments in commercial, residential and industrial markets. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Schlage®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings, transport and protect food and perishables, secure homes and commercial properties, and increase industrial productivity and efficiency. We are a $14 billion global business committed to sustainable business practices within our company and for our customers. For more information, visit www.ingersollrand.com.

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We are committed to using environmentally conscious print practices that reduce waste.

TRANE

Product Catalog

Indoor Gas Heating Products

Unit Heaters
Duct Furnaces

September 2009

UH-PRC002-EN

Introduction

Trane unit heaters, offered in both propeller and centrifugal models, are a complete heat generating and distributing plant, equipped with automatic controls, and packaged in an attractive streamlined housing. Designed for ceiling mounting, they provide a convenient low-cost method of comfortably heating stores, factories, warehouses, and other large open areas.

Trane unit heaters represent a technological breakthrough in quality. Trane offers customers the most complete line of unit heaters anywhere. And every unit in the line has been rated for 80 percent thermal efficiency or better.

But higher thermal efficiency and lower operating costs are just two features of this product line. Innovation—the engineering advances you've come to expect from Trane—can also be found across this entire line of unit heaters. And rugged, quality construction provides years of dependable service.

Quality products mean Trane value. So does fair, competitive pricing. The 10-year warranty tells you Trane will be here for the long haul—keeping our commitment to you. You can count on Trane standing behind every unit shipped. That is what Trane value means.

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Features Highlights

Ten-Year Warranty

The complete heat exchanger, draft hood assembly of the unit heater and burners are warranted by Trane to be free from defects in material and workmanship for a period of 10 years from the date of manufacture. (Warranty not applicable on duct furnaces or Separated Combustion units.)

Quiet Operation

Trane unit heaters incorporate an exceptionally balanced fan blade to assure quiet operation.

Heat Exchangers

All Trane heat exchangers are available in three types of steel:

- Aluminized Steel (Standard)
- 409 Grade Stainless Steel (Optional) (30–400 MBh units)
- 321 Grade Stainless Steel (Optional) (100–400 MBh units)

24V System

All units are equipped with a 24Vcontrol system which is powered by a 24V transformer as standard equipment.

Fan Time Delay

The fan time delay switch is mounted at the factory as standard equipment on all unit heaters (optional on duct furnaces). This feature eliminates an initial blast of cold air by allowing the unit to fire for a short period of time before actuating the fan motor. After the thermostat is satisfied (with burners off), the fan continues to operate for approximately one minute, removing residual heat from heat exchanger.

Burners

All sizes 30,000 through 400,000 Btu input are equipped with a proven design pressed steel burner having a unique “burner shade” protective device to prevent scale or foreign matter from plugging the burner ports.

Energy Saving Ignition Pilot Control

The pilot burner is ignited only during each cycle of operation, thereby conserving energy during the off cycle.

LP/Natural Operation

All units are available for operation on either natural or LP gas from our factory.

Easy Access For Maintenance

All Trane unit heaters are so designed that the burner access panel is removed with just two screws. Burners are individually removable for inspection and servicing. Pilot is also accessible through side panel access door.

Test Fire

All Trane unit heaters are test fired to assure proper operation.

Ideal For Retrofit

Trane unit heaters let you pocket fuel savings from day one and provide years of dependable service.

Features and Benefits

Propeller Fan / Tubular Heat Exchanger Unit Heaters

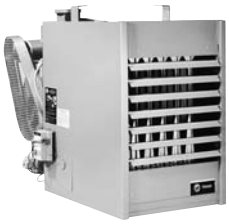
Trane has added a new unit heater to enhance its broad line of heating products. The Trane tubular heat exchanger is a very durable unit heater that provides an alternative to the traditional clam shell style. These are propeller style units that combine the latest tubular heat exchanger style with inshot burner technology to create a very efficient operating unit.

High Efficiency Propeller Fan Unit Heaters

Trane high-efficiency propeller fan unit heaters achieve annual fuel savings of 20 to 25 percent over conventional gravity vented heaters. Each unit features a factory-installed power venter fan and sealed flue collector that controls combustion and excess air during the on-cycle.

Heated air no longer escapes through the draft diverter opening during the off-cycle. Energy saving spark ignition reduces gas losses. The pilot only operates when required.

Horizontal power venting allows side wall venting, smaller openings, and single-walled vent pipe, reducing heat loss. Higher efficiencies can reduce equipment and material costs as well as installation time.



High Efficiency Centrifugal Fan Unit Heaters

The high-efficiency centrifugal fan unit heater keeps energy costs down. The design advances achieve annual fuel savings of 20 to 25 percent over conventional gravity vented heaters.

The high-efficiency centrifugal unit features integral power venting (factory-installed) and sealed flue collector for optimum combustion. Electronic spark ignition reduces pilot gas losses, and the power venter allows for horizontal venting through side walls. It adds up to higher seasonal efficiencies and lower installation time.

High Efficiency Indoor Duct Furnace

The high efficiency indoor gas duct furnace complements our current centrifugal and propeller fan lines. All high efficiency lines were designed to achieve fuel savings of up to 25 percent over conventional gravity vented heaters.

Conventional gravity vented heaters lost heated room air through the draft diverter opening. The high efficiency line features an integral flue vent fan and sealed flue collector for improved combustion. It reduces air requirements and wind effects on the system's efficiency. Intermittent pilot ignition reduces pilot gas losses and the flue vent fan allows for horizontal venting through side walls.

Note: *DUCT FURNACES ARE APPROVED FOR BLOW-THROUGH APPLICATIONS ONLY.*

Horizontal Blower Assemblies

Trane horizontal blower assemblies have been specially designed for air handling systems of high static pressure in combination with Trane duct furnaces. They are matched against the proper furnace size for greatest efficiency of operation.

Separated Combustion Propeller Fan Unit Heaters

The Trane separated combustion propeller type unit heater keeps energy costs down by offering 80 percent thermal efficiencies. With model inputs available from 100 through 400 MBH, they are designed to be installed in mildly hostile environments where dusty, dirty and mildly corrosives exist or high humidity or slightly negative pressures prevail.

The Trane propeller unit separates the combustion process from the environment where the unit is installed. A power venting system draws a controlled quantity of combustion air from outside the building. The same system exhausts flue gas products to the outside. The burners, pilot and flue system are enclosed within the unit. The entire combustion process is literally unaffected by the atmosphere in the space where the unit is located.

Combustion and exhaust air may be piped horizontally through a side wall, or vertically through the roof via our standard two-pipe venting arrangement or optional concentric vent kit which utilizes one 8-inch side wall or rooftop penetration for both the combustion and exhaust air. Both venting systems are C.S.A. International certified.

Separated Combustion Centrifugal Fan Unit Heaters

The Trane separated combustion centrifugal type unit heater keeps energy costs down by offering 80 percent thermal efficiencies. With model inputs available from 100 through 400 MBh, they are designed to be installed in mildly hostile environments where dusty, dirty and mildly corrosives exist or high humidity or slightly negative pressures prevail. This unit operates at a static pressure up to 0.2" water column, and is available with a louvered (standard) or flanged outlet (optional) when discharge duct work is desired.

These units separate the combustion process from the environment where the unit is installed. A power venting system draws a controlled quantity of combustion air from outside the building. The same system exhausts flue gas products to the outside. The burners, pilot and flue system are enclosed within the unit. The entire combustion process is literally unaffected by the atmosphere in the space where the unit is located.

Separated Combustion Duct Furnace

The Trane separated combustion duct furnace is designed for installation in dusty, dirty or mildly corrosive environments or where high humidity or slightly negative pressures exist. Ideal applications include HVAC equipment rooms, manufacturing facilities, automotive garages and greenhouses.

DETROIT RADIANT PRODUCTS COMPANY

MP SERIES
ModulatingPLUS TUBE HEATER

The ONLY Infrared Heater that Puts YOU in Control!

The MP Series fully modulating infrared heater is the only infrared heater that allows you to select the desired performance curve that best suits your building requirements.

RE-VERBER-RAY

ModulatingPLUS®
Patent Pending

Global Provider of Energy Efficient Heating Solutions Since 1955

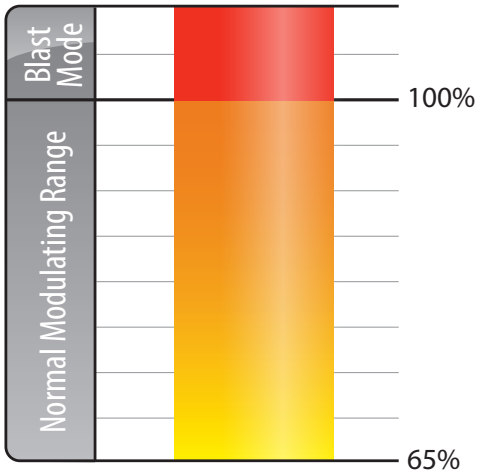
MP SERIES MODULATING PLUS TUBE HEATER

ModulatingPLUS®
Patent Pending

The MP Series by Detroit Radiant Products Company raises the bar with modulating technology. This full air and gas modulation line of heaters incorporates cutting edge technology such as the selection of three different performance curves as well as a 'Blast Mode'™ feature for extreme environmental demands.

MP SERIES UNIQUE OPERATIONAL FEATURES

- 'Blast Mode'™ feature allows the user to temporarily lock the heater into its highest input plus an extra 5,000 BTU's for extreme environmental demands.
- Choose from three performance modes.
- Models range from 80,000 to 200,000 BTU's.
- Full gas modulation with corresponding air flow modulation to achieve optimal fuel utilization and comfort levels.
- Forced high-fire start up for faster response to the environmental demand.
- Full proportional-integral-derivative (PID) logic to reduce on/off cycles over traditional heat.



MP SERIES PERFORMANCE CURVES / MODE SELECTION

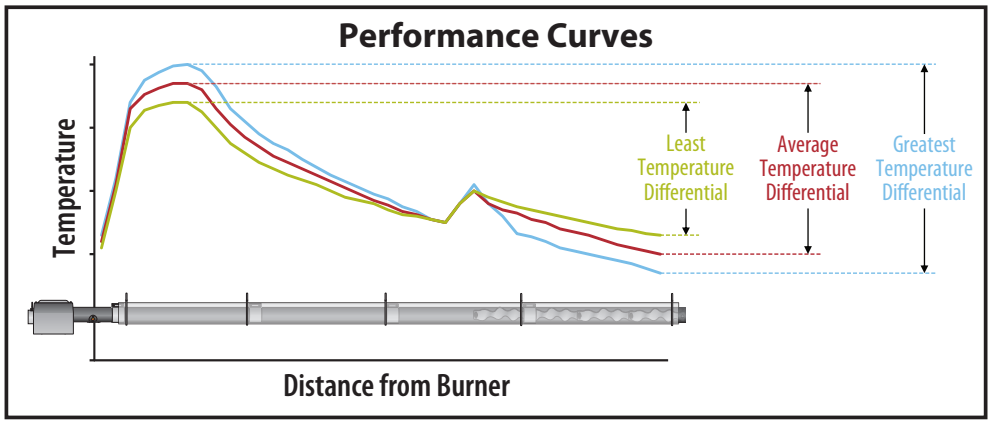
The MP Series is programmed to operate on several performance curves allowing the user to select the desired operation that best accommodates their specific needs.

Choose from:

'Comfort Mode': Unit operates to minimize temperature differentials across the length of the heater. It is intended to provide a system that has a greater perceived comfort than the other modes due to more even dissipation of heat.

'Standard Mode': Unit operates as a balance between Comfort Mode and Economy Mode. It is intended to provide a system that is moderately thermal efficient while still minimizing the greater temperature differentials associated with economy mode.

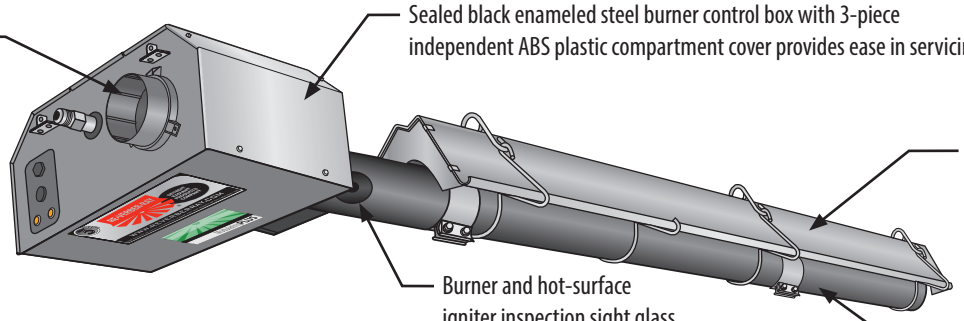
'Economy Mode': Unit operates to maximize thermal efficiency. It is designed to provide a system that is more thermally efficient than the other modes due to quicker dissipation of heat.



Mode Selection / Application Chart

Comfort	Standard Mode	Economy Mode
• Patios	• Service garages	• Aircraft hangars
• Loading docks	• Fire Stations	• Car washes
• Break areas and lunch rooms	• Populated warehouse heating	• Pole barns
• Kennels	• Manufacturing	• Foundries
• Parts counters and service desks	• Auto showrooms	• Unpopulated warehouses
• Golf driving ranges		
• Woodworking shops		

MP SERIES QUALITY CONSTRUCTION FEATURES


Fitted ABS plastic collar for connection to 4" air intake pipe.
Sealed black enameled steel burner control box with 3-piece independent ABS plastic compartment cover provides ease in servicing.
Highly polished aluminum reflectors with tube hangers.
Burner and hot-surface igniter inspection sight glass.
Black-coated, slip-fit radiant emitter tubes.

MP SERIES ADVANCED CONTROLLER OPTIONS

Loaded with powerful custom features, the **Premium User Interface (PUI)** is an advanced microprocessor smart logic controller that offers the optimal performance out of your MP Series heater. It modulates heater(s) with full PID control that considers various inputs and outputs.

Premium User Interface Module

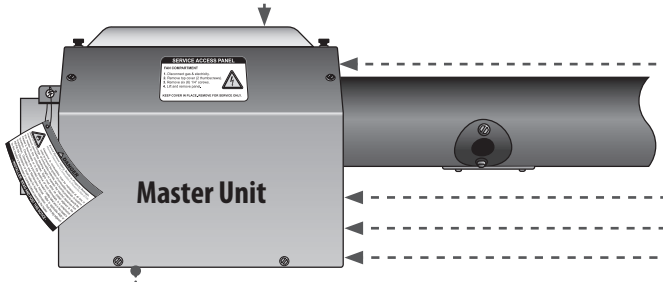
OTHER CONTROL OPTIONS:

PUI module

Building Management System (BMS)*

Used to control the MP Series via 4-20ma, 0-10vdc, or dry contacts.

**Some BMS control schemes require the use of the Premium User Interface (PUI) module.*



Master Unit

Potentiometer

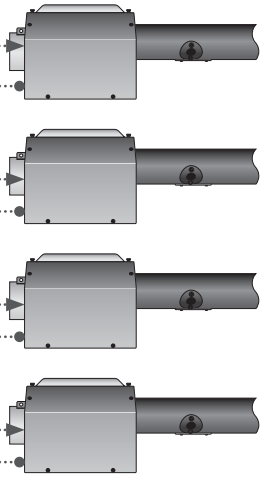
Used to control the MP Series in outdoor or spot heating environments to allow the user to manually control the heater's firing rate based on the dial position.

Single-Stage Thermostat

Used to control the MP Series in the most simplistic form.

External Thermistor

Optionally may be used in conjunction with a single-stage thermostat to better meet the demands of the space.



Additional "Slave" Unit(s)

up to 256 total units per temperature zone

MP SERIES MODULATING PLUS TUBE HEATER

RE-VERBER-RAY INFRARED RADIANT HEATERS

MP SERIES PRODUCT SPECIFICATIONS

Input Range:	80,000 to 200,000 BTU/h
Lengths:	25-70 Ft.
Gas Type:	Natural or Propane
Combustion Chamber:	Aluminized or Titanium Stabilized Steel
Radiant Tubes:	Aluminized Steel
Certification:	CSA Design Certified, ANSI Z83.20b
Limited Warranty:	1-5-10 (Components-Tubes-Burner)

MP SERIES OPTIONAL EQUIPMENT

U or L Configurations:	Available (RUP, REP)
Stainless Steel Upgrades:	Available
Indicator Lights:	Standard
Protective Guards:	Available (PG)
Side Shield Extensions:	Available (SSE)
Outdoor Approval:	Available (OD-KIT)

ELECTRICAL
- 120V, 60Hz, 3-wire.
- 4.8A starting, 1.1A running.

INTERNAL CONTROLS
- 100% safety shut-off.
- Microprocessor with self-learning control logic.

TUBE CONSTRUCTION
- As shown at left.
- 4 in. dia., 16 ga. construction.
- Interlocking swaged tube design.
- All tubes treated with .95 highly emissive black tube coating. Turbulator baffles.

REFLECTORS
- Highly polished aluminum.
- Continuous overlap design.
- Reflector end caps.
- Rotatable 0° to 45°.
- Anti-rattle tension springs.

COMBUSTION AIR
- Preset 4 in. air inlet collar.
- Sidewall or roof intake ready.

IGNITION/SENSE
- Hot surface ignition.
- Flame rod sense.
- Self-diagnostic LED.

VENTING
- 4" single vent.
- 6" common vent.
- Consult factory for additional venting options.

GAS CONNECTION
- 36" x 3/4" S.S. Flexible Gas Connector.

INLET GAS PRESSURE
(Inches W.C.)
- Manifold @ Min. Rate: 1.65 Nat. Gas; 4.10 LP.
- Manifold @ Max. Rate: 4.80 Nat. Gas; 11.0 LP.
- Min Inlet: 6.0 Nat. Gas; 12.0 LP.
- Max. Inlet: 14.0 Nat. Gas; 14.0 LP.

KIT CONTENTS
- All hangers & tube couplers.
- User manual(s) and application guidelines.

AVAILABLE MP SERIES MODELS & CLEARANCES

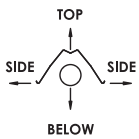
MODEL#	GAS*	BLAST MODE RATE (MBH)	STANDARD MODULATING RANGE (MBH)	LENGTH	WEIGHT	MOUNTING HEIGHTS**
MP-25-80	N or LP	85	52 - 80	26'-5"	145 lbs.	12' to 20'
MP-30-80	N or LP	85	52 - 80	31'-5"	160 lbs.	12' to 20'
MP-30-115	N or LP	120	75 - 115	31'-5"	160 lbs.	14' to 22'
MP-40-80	N or LP	85	52 - 80	41'-1"	190 lbs.	12' to 20'
MP-40-115	N or LP	120	75 - 115	41'-1"	190 lbs.	15' to 25'
MP-40-150	N or LP	155	97.5 - 150	41'-1"	190 lbs.	15' to 28'
MP-50-115	N or LP	120	75 - 115	50'-9"	235 lbs.	15' to 28'
MP-50-150	N or LP	155	97.5 - 150	50'-9"	235 lbs.	17' to 30'
MP-50-200	N or LP	200	130 - 194	50'-9"	235 lbs.	19' to 37'
MP-60-150	N or LP	155	97.5 - 150	60'-5"	265 lbs.	17' to 32'
MP-60-200	N or LP	200	130 - 194	60'-5"	265 lbs.	19' to 37'
MP-70-200	N or LP	200	130 - 194	70'-1"	300 lbs.	19' to 42'

* Specify natural (N) or propane (LP) gas.

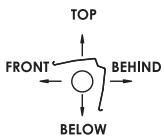
** Factory recommended mounting heights are provided as a guideline. Actual conditions may dictate variations from the above data.

Re-Verber-Ray® is a registered trademark of Detroit Radiant Products Company. Due to continuous product innovation, Detroit Radiant Products Company reserves the right to change product specifications without prior notice.

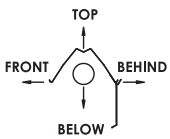
0° Mounting Angle



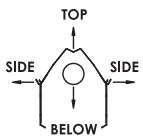
45° Mounting Angle



0° W/ 1 Side Shield



0° W/ 2 Side Shields



MP CLEARANCES TO COMBUSTIBLES (IN.)

MODEL NO.	MOUNTING ANGLE	SIDE FRONT	SIDE BEHIND	TOP	BELOW
MP (25,30,40)-80 [N,P]	0°	14	14	6	66
	45°	39	8	10	66
W/1 side shield	0°	29	8	6	66
W/2 side shields	0°	16	16	6	66
20 ft. from burner	0°	7	7	6	30
MP (30,40,50)-115 [N,P]	0°	20	20	6	76
	45°	58	8	10	76
W/1 side shield	0°	42	8	6	76
W/2 side shields	0°	20	20	6	76
20 ft. from burner	0°	7	7	6	30
MP (40,50,60)-150 [N,P]	0°	24	24	6	83
	45°	58	8	10	83
W/1 side shield	0°	42	8	6	83
W/2 side shields	0°	23	23	6	83
20 ft. from burner	0°	11	11	6	46
MP (50,60,70)-200 [N,P]	0°	41	41	6	100
	45°	63	8	10	100
W/1 side shield	0°	54	8	6	100
W/2 side shields	0°	30	30	6	100
20 ft. from burner	0°	11	11	6	50

Clearances published in MP Series manual and on warning label supersede data shown on this brochure. Reference MP Series installation manual for complete information.

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LBMP-2M-5/12_r1-10/13(AOG)

WAC Air Curtains
Technical Guide

FOR WIND STOPPING, INSECT CONTROL, AND ENVIRONMENTAL SEPARATION IN COMMERCIAL AND INDUSTRIAL APPLICATIONS

LJ ING®

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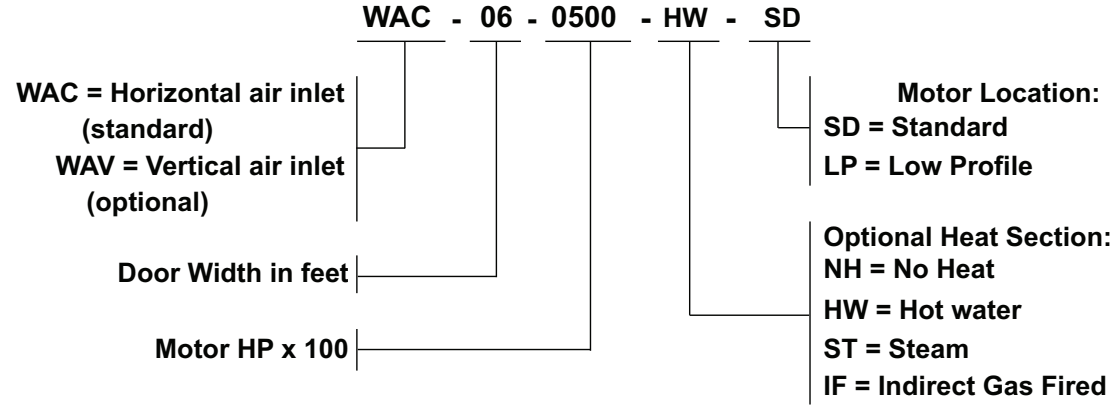
Introduction

Since 1875, the L.J. Wing Company has been a leader in providing innovative solutions for difficult HVAC problems. Wing WAC Air Curtains can offer protection against cold or hot outside air, outside wind, airborne insects, and airborne particles and contaminants. This technical guide will help you size, select and specify the proper WAC model to satisfy your project's door protection requirements. If you have any questions, please contact your local L.J. Wing representative; they will be glad to assist you.

Model Description


WAC - 06 - 0500 - HW - SD
WAC = Horizontal air inlet (standard)
WAV = Vertical air inlet (optional)
Door Width in feet
Motor HP x 100
Motor Location:
SD = Standard
LP = Low Profile
Optional Heat Section:
NH = No Heat
HW = Hot water
ST = Steam
IF = Indirect Gas Fired

SELECTION

Selection Procedure and Example

Given:
- Door width and door height in feet.
- Design wind velocity in mph.
- If applicable, type of optional heating source: steam coil, hot water coil, indirect fired gas furnace.
- Electrical service characteristics in volts/phase/hertz.

Procedure:
1. Select WAC model size and airflow in cfm from Selection Table below. In many instances, more than one airflow selection will be applicable.
2. Determine the external static pressure requirement as the sum of the static pressure losses of any optional accessories, including filters, steam coil or hot water coil from page 5, or indirect-fired gas furnace from page 6.
3. Using the CFM of step 1 and the external static pressure calculated in Step 2, look up the required motor horsepower from the Fan Performance table on page 7.
4. Referring to the drawing on page 8, choose whether the standard or low profile motor location is desired.
5. Construct the model number using the description shown at the bottom of page 2.

Example:

Given:
- Door width = 14 feet; Door height = 15 feet.
- Design velocity = 9 mph.
- Steam heat with 5 psig pressure.
- Electrical Service = 230volt/3 phase/60 Hz.

Procedure:
1. From Selection Table, the proper selection is a size 14 air curtain with airflow of 16,743 cfm, suitable for door heights of 12 to 17 feet in an 8-10 mph wind.
2. From Steam and Hot Water coil data table on page 5, Coil static pressure drop = 0.41 inches w.c.
3. From Motor HP table on page 7 for a WAC-14 delivering 16,743 cfm with an external static pressure drop of 0.41 inches w.c.: Two each 7.5 HP motors are required.
4. The standard motor location is chosen.
5. The full model number is thus: WAC - 14 – 1500 – ST – SD.

Selection Table

Size	Airflow Rate (CFM)	Door Height in Feet at 8-10 mph wind	Door Height in Feet at 12-15 mph wind
04	2,775	Under 10	Under 10
	3,177	10-11	
	3,496		10-11
	4,002	12-17	
	4,405		12-17
	5,043	18-20	
05	3,672	Under 12	Under 10
	4,041		10-11
	4,626	12-17	
	5,092		12-17
	5,828	18-20	
	6,910		18-20
06	4,347	Under 10	Under 10
	4,784		
	5,477	10-17	10-11
	6,028		
	6,900		12-17
	8,181	18-20	
	9,365		18-20
07	4,896	Under 10	Under 10
	5,604		10-11
	6,168	10-17	
	7,061		12-17
	8,371	18-20	
	9,583		18-20
	10,547		
08	6,354	Under 10	Under 10
	6,993		10-11
	8,005	10-17	
	9,491		12-17
	10,864		18-20
	11,958	18-20	

Size	Airflow Rate (CFM)	Door Height in Feet at 8-10 mph wind	Door Height in Feet at 12-15 mph wind
09	7,816	Under 12	Under 10
	8,947		10-11
	10,608	12-17	12-17
	12,143	18-20	
	13,366		18-20
10	9,123	Under 12	Under 10
	10,816		10-11
	12,381		12-17
	13,628	12-20	18-20
	15,600		
12	9,569	Under 10	Under 10
	10,953	10-11	
	12,987	12-17	10-11
	14,866		12-17
	16,362	18-20	
	18,730		18-20
14	11,208	Under 12	Under 10
	12,336		10-11
	14,121		
	16,743	12-17	12-17
	19,166	18-20	
	21,095		18-20
16	12,707	Under 10	Under 10
	13,986		10-11
	16,010	10-17	
	18,982		12-17
	21,729	17-20	
	23,916		18-20

PERFORMANCE

AMCA Certified Ratings

Size	Model	Airflow Rate (CFM)	Outlet Velocity (FPM)	Power Rating (watts)	Outlet Velocity Uniformity (%)
04	04-0050	2,775	1,931	537	94.4
	04-0075	3,177	2,210	762	94.4
	04-0100	3,496	2,432	989	94.4
	04-0150	4,002	2,784	1,472	94.4
	04-0200	4,405	3,065	1,860	94.4
	04-0300	5,043	3,508	2,746	94.4
05	05-0075	3,672	2,073	762	90.0
	05-0100	4,041	2,282	989	90.0
	05-0150	4,626	2,612	1,472	90.0
	05-0200	5,092	2,875	1,860	90.0
	05-0300	5,828	3,291	2,746	90.0
	05-0500	6,910	3,902	4,571	90.0
06	06-0075	4,347	2,066	762	91.4
	06-0100	4,784	2,274	989	91.4
	06-0150	5,477	2,603	1,472	91.4
	06-0200	6,028	2,865	1,860	91.4
	06-0300	6,900	3,279	2,746	91.4
	06-0500	8,181	3,888	4,571	91.4
	06-0750	9,365	4,451	6,749	91.4
07	07-0100	4,896	2,055	989	90.0
	07-0150	5,604	2,353	1,472	90.0
	07-0200	6,168	2,590	1,860	90.0
	07-0300	7,061	2,964	2,746	90.0
	07-0500	8,371	3,515	4,571	90.0
	07-0750	9,583	4,023	6,749	90.0
	07-1000	10,547	4,428	8,715	90.0
08	08-0150	6,354	2,270	1,472	91.4
	08-0200	6,993	2,499	1,860	91.4
	08-0300	8,005	2,860	2,746	91.4
	08-0500	9,491	3,391	4,571	91.4
	08-0750	10,864	3,882	6,749	91.4
	08-1000	11,958	4,273	8,715	91.4

Size	Model	Airflow Rate (CFM)	Outlet Velocity (FPM)	Power Rating (watts)	Outlet Velocity Uniformity (%)
09	09-0200	7,816	2,611	1,860	90.0
	09-0300	8,947	2,989	2,746	90.0
	09-0500	10,608	3,544	4,571	90.0
	09-0750	12,143	4,057	6,749	90.0
	09-1000	13,366	4,466	8,715	90.0
10	10-0300	9,123	2,654	2,746	91.4
	10-0500	10,816	3,147	4,571	91.4
	10-0750	12,381	3,602	6,749	91.4
	10-1000	13,628	3,964	8,715	91.4
	10-1500	15,600	4,538	12,440	91.4
12	12-0200	9,569	2,274	1,860	91.4
	12-0300	10,953	2,603	2,746	91.4
	12-0500	12,987	3,086	4,571	91.4
	12-0750	14,866	3,532	6,749	91.4
	12-1000	16,362	3,888	8,715	91.4
	12-1500	18,730	4,451	12,440	91.4
14 ①	14-0300	11,208	2,353	2,944	90.0
	14-0400	12,336	2,590	3,720	90.0
	14-0600	14,121	2,964	5,492	90.0
	14-1000	16,743	3,515	9,142	90.0
	14-1500	19,166	4,023	13,498	90.0
	14-2000	21,095	4,428	17,430	90.0
16 ①	16-0300	12,707	2,270	2,944	91.4
	16-0400	13,986	2,499	3,720	91.4
	16-0600	16,010	2,860	5,492	91.4
	16-1000	18,982	3,391	9,142	91.4
	16-1500	21,729	3,882	13,498	91.4
	16-2000	23,916	4,273	17,430	91.4

Notes:

① Sizes 14 and 16 use two motors of identical size. For example; the model 14-0600 uses two 3 HP motors.

Velocity Projection (model WAC-6)

Velocity (FPM)	Distance from nozzle (inches)
6070	4
2765	36
1685	120
1375	204

NOTES:

1. The ratings data shown above only applies to base (unheated) WAC and WAV units at free delivery (External static pressure = 0.0" inches W.C.).

PERFORMANCE

Steam and Hot Water Coils

Size	CFM	Steam Coil *		Hot Water Coil **		Static Pressure Loss (Inches w.c.)
		Heat Transfer (MBH)	Delta T (Degrees F)	Heat Transfer (MBH)	Delta T (Degrees F)	
04	2,775	179	59	123	41	0.13
	3,177	194	56	135	39	0.17
	3,496	204	53	143	37	0.20
	4,002	220	50	157	36	0.26
	4,405	231	48	167	34	0.31
	5,043	248	45	181	33	0.39
05	3,672	232	58	163	41	0.15
	4,041	245	56	174	40	0.18
	4,626	264	52	190	38	0.22
	5,092	278	50	202	37	0.27
	5,828	298	47	220	35	0.34
	6,910	325	43	244	33	0.46
06	4,347	276	58	196	41	0.15
	4,784	291	56	209	40	0.17
	5,477	314	52	228	38	0.22
	6,028	330	50	242	37	0.26
	6,900	355	47	264	35	0.33
	8,181	387	43	294	33	0.45
	9,365	413	40	319	31	0.57
07	4,896	313	59	224	42	0.14
	5,604	338	55	245	40	0.18
	6,168	356	53	260	39	0.22
	7,061	383	50	284	37	0.27
	8,371	418	46	316	35	0.37
	9,583	447	43	343	33	0.47
	10,547	469	41	363	32	0.56
08	6,354	390	56	284	41	0.17
	6,993	411	54	302	39	0.20
	8,005	442	50	329	37	0.25
	9,491	483	46	366	35	0.34
	10,864	518	43	398	33	0.44
	11,958	543	41	422	32	0.52
09	7,816	451	53	334	39	0.21
	8,947	485	50	364	37	0.27
	10,608	530	46	405	35	0.37
	12,143	567	43	440	33	0.47
	13,366	594	41	466	32	0.56
10	9,123	523	52	390	39	0.22
	10,816	573	48	434	37	0.30
	12,381	614	45	465	34	0.38
	13,628	645	43	494	33	0.45
	15,600	687	40	529	31	0.57
12	9,569	567	54	407	39	0.19
	10,953	610	51	444	37	0.25
	12,987	667	47	495	35	0.33
	14,866	715	44	539	33	0.42
	16,362	749	42	571	32	0.50
	18,730	800	39	619	30	0.64
14	11,208	658	54	478	39	0.20
	12,336	693	52	508	38	0.24
	14,121	745	48	554	36	0.30
	16,743	813	45	616	34	0.41
	19,166	869	42	669	32	0.52
	21,095	910	40	708	31	0.62
16	12,707	763	55	557	40	0.18
	13,986	805	52	592	39	0.22
	16,010	865	49	646	37	0.28
	18,982	945	45	718	34	0.37
	21,729	1,011	42	780	33	0.48
	23,916	1,060	40	827	31	0.56

*Steam coil preformance based on 2 row, 6 fpi coil at 5 psi and 60 degree EAT.
**HW coil performance based on 2 row, 6 fpi coil at 200 EWT/180 LWT and 60 degree EAT.
For steam or HW coil performance at other conditions, consult factory.

PERFORMANCE

Indirect Fired Heaters

Size	CFM	Heater Size	# of Heaters	MBH Output	Delta T (degrees F)	Static Pressure loss (Inches w.c.)
04	2,775	QVED-200	1	160	53	0.28
	3,177				47	0.35
	3,496				42	0.43
	4,002				37	0.53
	4,405				34	0.69
	5,043				29	0.90
05	3,672	QVED-350	1	280	71	0.15
	4,041				64	0.21
	4,626				56	0.27
	5,092				51	0.31
	5,828				44	0.40
	6,910				38	0.59
06	4,347	QVED-350	1	280	60	0.22
	4,784				54	0.30
	5,477				47	0.38
	6,028				43	0.45
	6,900				38	0.60
	8,181				32	0.80
	9,365				28	1.05
07	4,896	QVED-400	1	320	61	0.23
	5,604				53	0.30
	6,168				48	0.36
	7,061				42	0.46
	8,371				35	0.68
	9,583				31	0.86
	10,547				28	1.04
08	6,354	QVED-250	2	400	58	0.25
	6,993				53	0.29
	8,005				46	0.35
	9,491				39	0.50
	10,864				34	0.65
	11,958				31	0.79
09	7,816	QVED-300	2	480	57	0.27
	8,947				50	0.32
	10,608				42	0.46
	12,143				37	0.59
	13,366				33	0.73
10	9,123	QVED-350	2	560	57	0.28
	10,816				48	0.36
	12,381				42	0.49
	13,628				38	0.58
	15,600				33	0.72
12	9,569	QVED-400	2	640	62	0.20
	10,953				54	0.29
	12,987				46	0.39
	14,866				40	0.52
	16,362				36	0.62
	18,730				32	0.81
14	11,208	QVED-300	3	720	59	0.21
	12,336				54	0.29
	14,121				47	0.35
	16,743				40	0.49
	19,166				35	0.65
	21,095				32	0.84
16	12,707	QVED-350	3	840	61	0.22
	13,986				56	0.28
	16,010				49	0.33
	18,982				41	0.49
	21,729				36	0.61
	23,916				32	0.73

PERFORMANCE

Motor HP

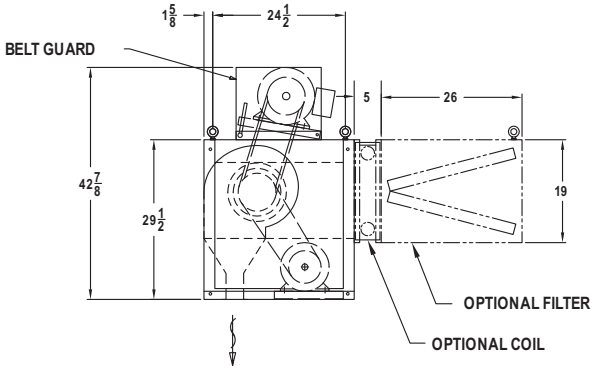
Size	CFM	Motor HP at External Static Pressure (Inches W.C.)												
		0.00	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.75	0.80	0.90	1.00	1.25	1.50
04	2,775	0.50	0.75	0.75	0.75										
	3,177	0.75	1.0	1.0	1.0	1.5	1.5								
	3,496	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5						
	4,002	1.5	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0				
	4,405	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
	5,043	3.0	3.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
05	3,672	0.75	1.0	1.5	1.5										
	4,041	1.0	1.5	1.5	1.5	1.5									
	4,626	1.5	2.0	2.0	2.0	2.0	3.0								
	5,092	2.0	3.0	3.0	3.0	3.0	3.0	3.0							
	5,828	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
	6,910	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
06	4,347	0.75	1.0	1.5	1.5	1.5									
	4,784	1.0	1.5	1.5	1.5	2.0	2.0								
	5,477	1.5	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0					
	6,028	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0			
	6,900	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
	8,181	5.0	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	10.0
	9,365	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	15.0
07	4,896	1.0	1.5	1.5	1.5										
	5,604	1.5	2.0	2.0	2.0	3.0									
	6,168	2.0	3.0	3.0	3.0	3.0									
	7,061	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0						
	8,371	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		
	9,583	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	15.0	
	10,547	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
08	6,354	1.5	2.0	2.0	2.0	2.0	3.0	3.0							
	6,993	2.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0					
	8,005	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
	9,491	5.0	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		
	10,864	7.5	7.5	7.5	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	15.0
	11,958	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
09	7,816	2.0	3.0	3.0	3.0	3.0	3.0								
	8,947	3.0	5.0	5.0	5.0	5.0	5.0	5.0							
	10,608	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5			
	12,143	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
	13,366	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
10	9,123	3.0	5.0	5.0	5.0	5.0	5.0	5.0							
	10,816	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
	12,381	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	15.0		
	13,628	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
	15,600	15.0	15.0	15.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
12	9,569	2.0	3.0	3.0	3.0	3.0	3.0								
	10,953	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0					
	12,987	5.0	5.0	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5			
	14,866	7.5	7.5	7.5	7.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
	16,362	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	20.0
	18,730	15.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	25.0
14	11,208	(2) 1.5	(2) 2.0	(2) 2.0	(2) 2.0	(2) 3.0									
	12,336	(2) 2.0	(2) 3.0	(2) 3.0	(2) 3.0	(2) 3.0									
	14,121	(2) 3.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0						
	16,743	(2) 5.0	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5		
	19,166	(2) 7.5	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)15.0	
	21,095	(2)10.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	
16	12,707	(2) 1.5	(2) 2.0	(2) 2.0	(2) 2.0	(2) 2.0	(2) 3.0								
	13,986	(2) 2.0	(2) 3.0	(2) 3.0	(2) 3.0	(2) 3.0	(2) 3.0	(2) 3.0	(2) 5.0						
	16,010	(2) 3.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0	(2) 5.0			
	18,982	(2) 5.0	(2) 5.0	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5	(2) 7.5		
	21,729	(2) 7.5	(2) 7.5	(2) 7.5	(2)7.5	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)15.0
	23,916	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)10.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0	(2)15.0

Note: If applicable, add 0.25 inches W.C. for filter static pressure loss.

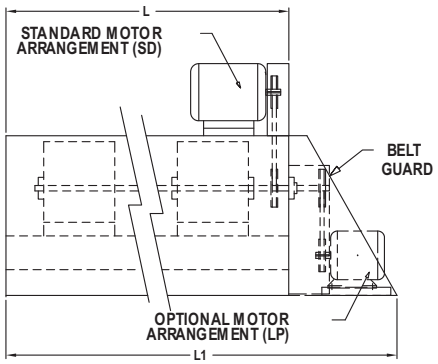
DIMENSIONS

Air Curtain with Optional Heating Coil

C000617A



END VIEW



SIDE VIEW

SIZE	L	L1	QTY BLOWERS
04	52	68	2
05	64	80	3
06	76	92	3
07	86	102	4
08	101	117	4
09	108	130	5
10	124	146	5
12	152	174	6
14	172	216	8
16	202	246	8

NOTES: 1. UNIT WITH HORIZONTAL AIR INLET (MODEL WAC) SHOWN;
UNIT WITH TOP VERTICAL AIR INLET (MODEL WAV) OPTIONAL.
2. ALL DIMENSIONS IN INCHES.

Weights

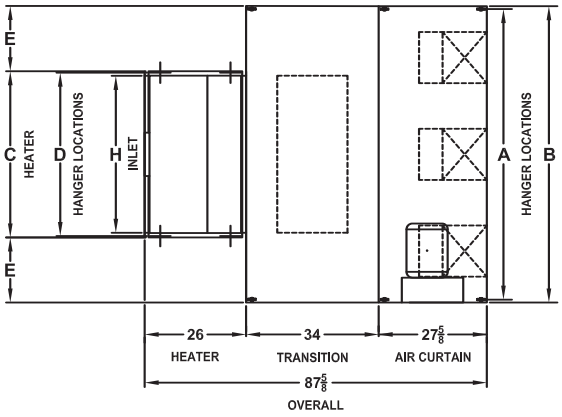
Size	Base Unit	Heating Coil	Filter Section	Gas Heater Section
04	375	67	115	232
05	480	79	135	389
06	530	92	160	389
07	615	102	170	403
08	660	118	190	526
09	750	125	200	624
10	792	141	225	778
12	1056	174	320	806
14	1224	194	340	936
16	1320	226	380	1167

Note: All weights in pounds.

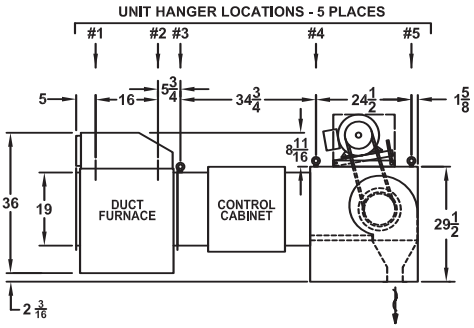
DIMENSIONS

Air Curtain with One Indirect-Fired Furnace

C000618B



PLAN VIEW



END ELEVATION

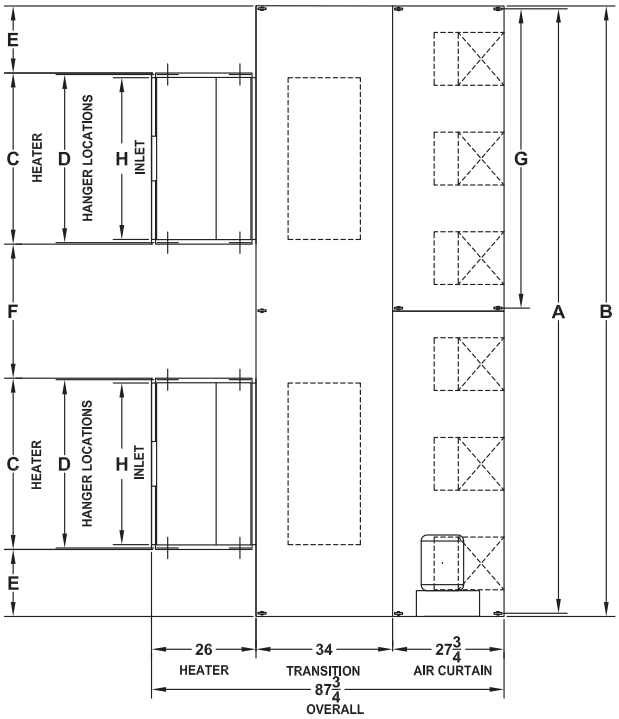
SIZE	HEATER MODEL	QTY	A	B	C	D	E	H	BLOWER QUANTITY
04	QVED-200	1	50 3/4	52	26 1/8	25 3/8	12 15/16	23 3/4	2
05	QVED-350	1	62 3/4	64	42 5/8	41 7/8	10 11/16	40 1/4	3
06	QVED-350	1	74 3/4	76	42 5/8	41 7/8	16 11/16	40 1/4	3
07	QVED-400	1	84 3/4	86	48 1/8	47 3/8	18 15/16	45 3/4	4

NOTES: 1. ALL DIMENSIONS ARE IN INCHES.
2. ABOVE DRAWING ILLUSTRATES NUMBER OF BLOWERS PROVIDED FOR WAC-05. REFER TO ABOVE TABLE FOR QUANTITY OF BLOWERS PROVIDED IN OTHER MODELS.
3. DUCT FURNACE VENT CONNECTION SIZE IS 5" FOR SIZE 04 AND 6" FOR SIZE 05, 06 AND 07.

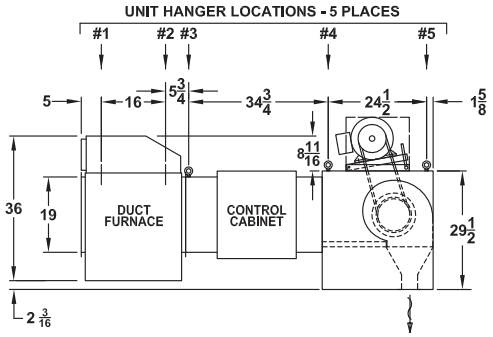
DIMENSIONS

Air Curtain with Two Indirect-Fired Furnaces

C000619B



PLAN VIEW



END ELEVATION

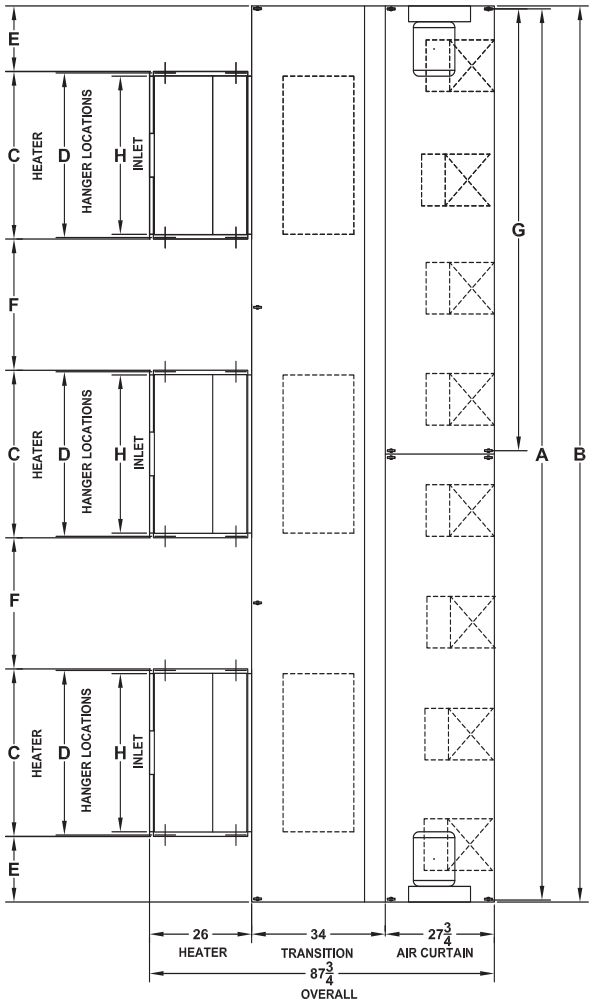
SIZE	HEATER MODEL	QTY	A	B	C	D	E	F	G	H	QTY BLOWERS
08	QVED-250	2	99 3/4	101	31 5/8	30 7/8	9 7/16	18 7/8	-	29 1/4	4
09	QVED-300	2	106 3/4	108	37 1/8	36 3/8	8 7/16	16 7/8	-	34 3/4	5
10	QVED-350	2	122 3/4	124	42 5/8	41 7/8	9 11/16	19 3/8	-	40 1/4	5
12	QVED-400	2	150 3/4	152	48 1/8	47 3/8	13 15/16	27 7/8	74 3/4	45 3/4	6

NOTES: 1. ALL DIMENSIONS ARE IN INCHES.
2. ABOVE DRAWING ILLUSTRATES NUMBER OF BLOWERS PROVIDED FOR WAC-12;
REFER TO ABOVE TABLE FOR QUANTITY OF BLOWERS PROVIDED IN OTHER MODELS.

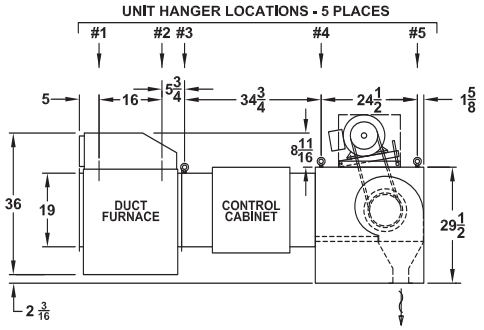
DIMENSIONS

Air Curtain with Three Indirect-Fired Furnaces

C000620A



PLAN VIEW



END ELEVATION

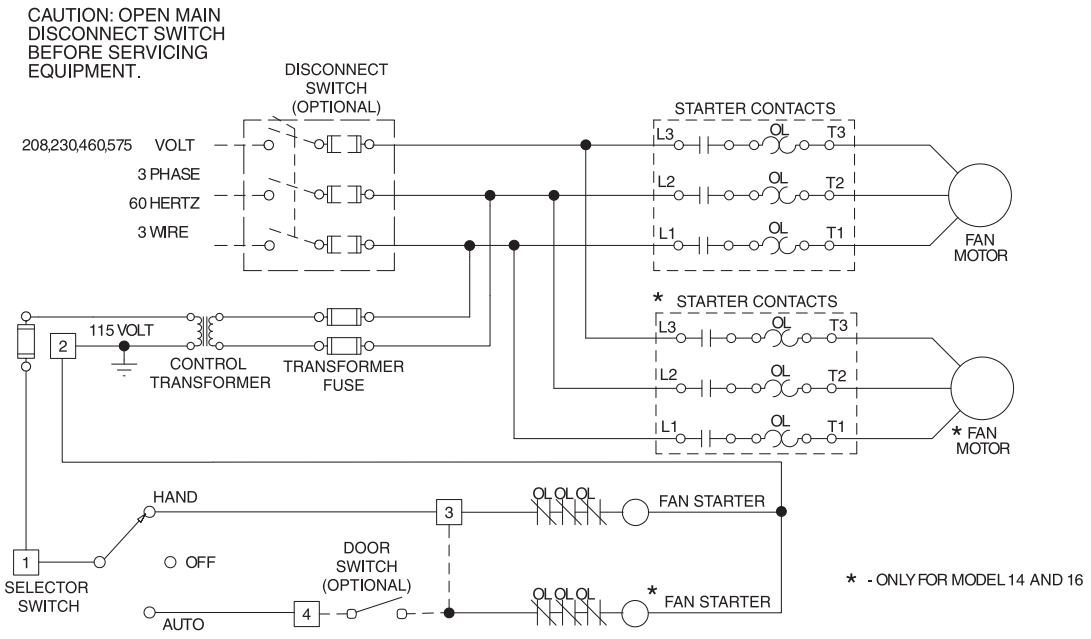
SIZE	HEATER MODEL	QTY	A	B	C	D	E	F	G	H	QTY BLOWERS
14	QVED-300	3	170 3/4	172	37 1/8	36 3/8	10 3/16	20 1/8	84 3/4	34 3/4	8
16	QVED-350	3	200 3/4	202	42 5/8	41 7/8	12 7/16	24 5/8	99 3/4	40 1/4	8

NOTE: ALL DIMENSIONS ARE IN INCHES.

ELECTRICAL

Wiring Diagram

C000623



Controls

WAC Air Curtains without optional gas heating are shipped as standard without controls. Motor(s) for such units are mounted on adjustable bases with leads for easy field connections.

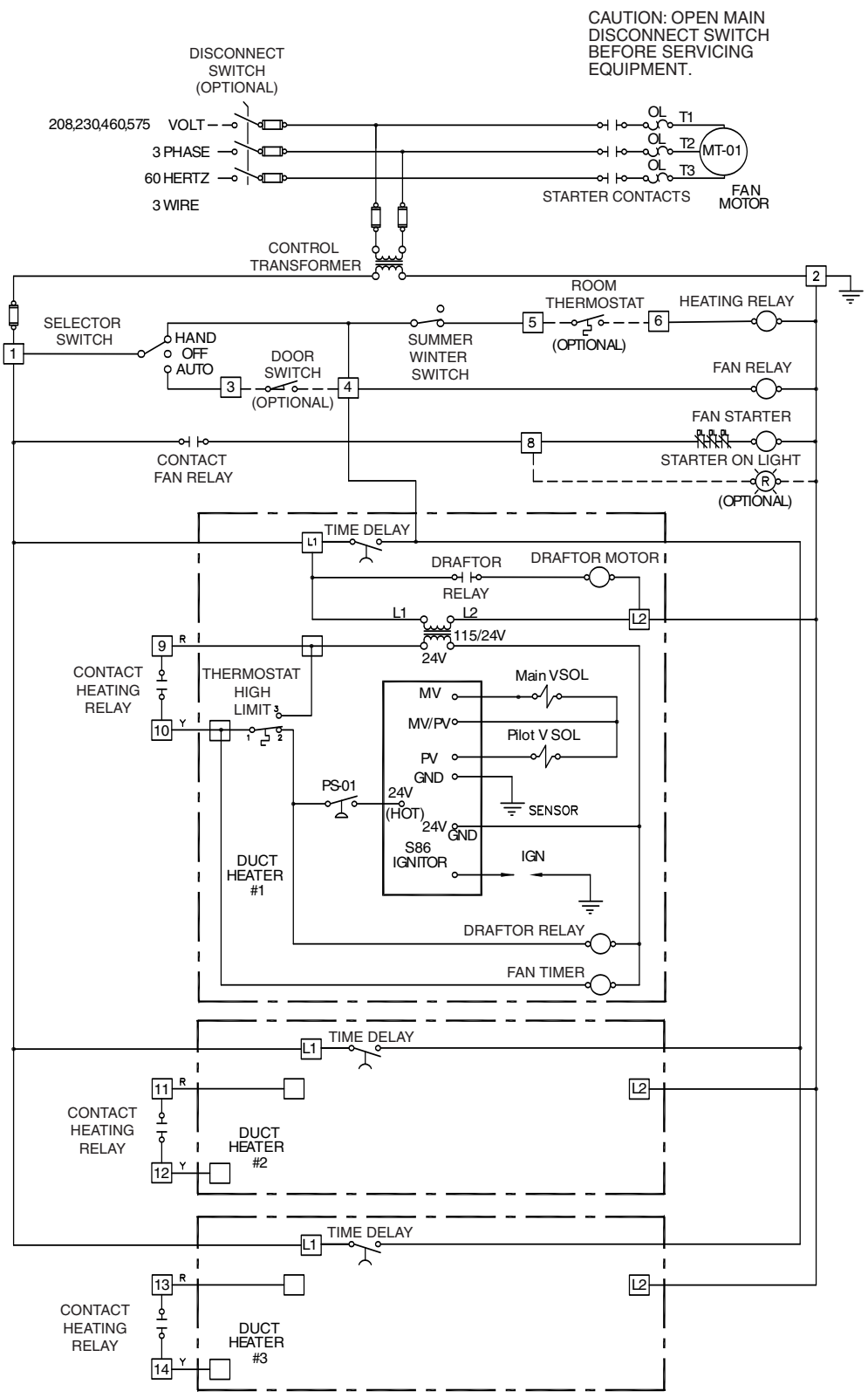
A factory-wired control panel is available as an option, complete with NEMA 1 enclosure, magnetic motor starter, overload relay heaters, disconnect switch, 120-volt transformer, terminal strip, and a Hand-Off-Auto switch.

For automatic control with the Hand-Off-Auto switch, two additional options are available: a room thermostat or a door switch. Each of these options must be mounted and wired by others. In the case of a door switch, the air curtain would be wired so that it runs when the door is open.

The Hand-Off-Auto switch is mounted on the face of the control panel. When in the “Hand” position, the air curtain runs regardless of the position of the door switch or room thermostat. When in the “Automatic” position, the air curtain will cycle on and off at the control of the door switch or room thermostat.

Wiring Diagram for Unit with Gas Furnaces

C000622



ELECTRICAL

Amp Draw Table

ITEM	SOURCE	ELECTRICAL SERVICE	MOTOR AMPS AT GIVEN MOTOR HORSEPOWER											
			1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20	25
A	Blower Motor	208V 3 Ph	2.4	3.5	4.6	6.6	7.5	10.6	16.7	24.2	30.8	46.2	59.4	74.8
		230V 3 Ph	2.2	3.2	4.2	6.0	6.8	9.6	15.2	22.0	28.0	42.0	54.0	68.0
		460V 3 Ph	1.1	1.6	2.1	3.0	3.4	4.8	7.6	11.0	14.0	21.0	27.0	34.0
		575V 3 Ph	0.9	1.3	1.7	2.4	2.7	3.9	6.1	9.0	11.0	17.0	22.0	27.0

ITEM	SOURCE	ELECTRICAL SERVICE	CONTROL CIRCUIT AMPS	
			W/O GAS HEATER(S)	WITH GAS HEATER(S)
B	Control Transformer	208V 3 Ph	0.5	7.2
		230V 3 Ph	0.4	6.5
		460V 3 Ph	0.2	3.3
		575V 3 Ph	0.2	2.6

NOTES:
1. Above motor amps are based on 2002 edition of NEC.
2. Control circuit amps are based on standard controls.

Steps to size optional disconnect switch:
1. Using the required blower motor HP and the given electrical service, look up the blower motor amp draw from Item A in the above chart.
2. Look up the control circuit amps for the unit gas heater configuration from Item B in above chart.
3. Add Blower Motor amps from Step 1 to Control Circuit amps of Step 2, then multiply result by 1.25 to get required size of optional disconnect switch.

Specification

General
Furnish L.J. Wing model WAC air curtain(s) with performance as shown on the schedule. Air curtains shall be suited for blanketing the door widths listed on the schedule, and include a minimum overlap of two inches on both sides of the door to sweep the outer edges of the door opening.

Fan and Motor Assembly
Provide belt drive motors so that velocity can be maintained through the use of adjustable sheaves. Baffles in the discharge chamber used to adjust velocity while increasing pressure drop are not acceptable. One motor shall be used for air curtains up to twelve feet long; longer air curtains shall have a maximum of two motors.

Motors are to be mounted outside of the airstream (on top of the casing)(on end for low profile), thus eliminating the need for air diverters. Motors shall be (open drip-proof) (totally enclosed fan-cooled) type and be easily accessible for maintenance without any disassembly of the air curtains. Units with three phase motor(s) 1 HP and larger will have Energy Efficient motor(s).

Blowers shall be centrifugal forward curved type, complete with housings. Blowers shall be tested in accordance with standards set forth in AMCA Standard 210. Blower wheels and housings are to be constructed of painted cold rolled steel. Wheels are to be statically and dynamically balanced. Blower speeds shall not exceed 1,500 rpm.

Casing
Unit shall be constructed with 11 gauge galvanized steel frame, and have sufficient rigidity such that the deflection across its entire length shall not exceed 1/4 inch. Casings are to be built with 18 gauge, galvanized steel. Casings shall have means of attaching hangers, and be equipped with removable panels for access to bearings, couplings and other internal components.

An inlet screen is to be furnished on front of the unit for direct air intake. Multiple inlet screens on top of the unit shall be provided for the purpose of air recirculation.

Specification, cont.

Plenum/Discharge
Provide a tapered plenum at least ten inches long on the discharge of the blowers. A discharge nozzle at least four inches wide shall be included to distribute the outlet air. The outlet air velocity pattern shall have a uniformity of better than 90% over the entire length of the air curtain. Uniformity from the discharge nozzle shall be accomplished without the use of air diverters. Discharge nozzles shall be field adjustable to plus or minus fifteen degrees with no objects, dampers, or grilles included to add turbulence or create a pressure drop in the airstream.

The unit design shall allow for the addition of heating sections or filters without altering the base unit.

Optional Accessories
A. Provide a factory-wired control panel that includes the following items:
- NEMA 1 enclosure (NEMA 12 enclosure)
- Magnetic motor starter
- Overload relay heaters
- Disconnect switch
- 120 volt transformer
- Terminal strip
- Hand-Off-Auto switch in cover

Control panels to be remote mounted (unit-mounted)(unit-mounted and wired to motor). (Control panel shall be U.L. listed).

B. Provide steam or hot water heating coil constructed of two rows of minimum 0.020 inch thick wall copper tubing mechanically expanded into minimum 0.006 inch thick, full collar aluminum fins spaced at six fins per inch. Coil face velocity shall not exceed 1,200 fpm. Coils are to be rated at 125 psig operating pressure and tested at 400 psig.

C. Provide AGA-certified indirect-fired furnaces of the capacities as indicated on the schedule. Unit shall include a transition section between the furnace outlet and air curtain inlet. The duct furnaces shall include a (single stage) (two stage) gas valve. The heat exchanger is to be constructed of (aluminized steel) (409 stainless steel). Provide unit for induced draft fans. Duct furnaces are to be provided with automatic spark ignition. Fuel supply to be natural gas (propane).

D. Filter section with disposable filters.

E. Painted galvanized casing.

F. Door switch.

G. On-off room thermostat.

H. Vibration hangers

Schedule

From Example on page 3:

Model No.	Airflow (cfm)	External Static Pressure (inches w.c.)	Motor HP	Steam Pressure (psig)	Heat Transfer, MBTUH	Delta T (Degrees F)	Electrical Volts/phase/HZ	Tag
WAC-14-1500-ST-SD	16,743	0.41	2@7.5	5	813	45	230/3/60	DAC-1

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Fans & Blowers

Twin City

Defining Innovation.

PROPELLER WALL FANS, DIRECT AND BELT DRIVEN

TYPE WPD | TYPE WPB

BULLETIN 4820
July 2011

WPD / WPB Propeller Wall Fans

Twin City Fan & Blower WPD Medium Duty and WPB Light and Medium Duty Propeller Wall Fans are specifically designed for cost effective, general-purpose ventilation. All belt driven models are available in either exhaust or supply configurations. The steel panel design is available with cast aluminum or fabricated steel propellers to meet specific application requirements. Regardless of the application, the WPD and WPB Series offers a high quality, cost competitive propeller fan solution.

WPB with L2 Propeller

Size and Performance

- Direct drive sizes 14" to 48"
- Belt driven sizes 21" to 60"
- Capacities from 1,900 CFM to 62,800 CFM
- Static pressures to 1" w.g.
- Maximum operating temperature is 130ºF

Construction Features

- Cast aluminum or fabricated steel propellers.
- Steel panel with deep formed inlet venturi which distributes air velocity uniformly.
- Pre-punched mounting holes for ease of installation.
- Motor supports are constructed of heavy-gauge galvanized steel.
- Fans designed for exhaust and supply service are provided with motor and drive located on the interior side of the building.
- Pre-engineered accessories to accommodate any installation.
- Dynamically balanced propellers for quiet, vibration-free operation.
- Designed for continuous duty.
- Cast iron pillow block bearings selected for L50 average life of 200,000 hours at maximum cataloged operating speeds.

WPD with E4 Propeller

Models WPD and WPB are UL/cUL 705 listed for electrical, File No. E158680.

Twin City Fan & Blower, a Twin City Fan Company, certifies that the WPD and WPB Wall Propeller Fans shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the AMCA Certified Ratings Program.

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Propellers

WPD and WPB propeller fans are available with either fixed pitch fabricated steel (sizes 21 through 60) or adjustable pitch cast aluminum propellers (sizes 14 through 60). Each propeller type is designed for a wide variety of commercial market applications with static pressure capabilities from 0" to 1". Regardless of the application requirement, WPD and WPB propellers offer the right choice.

Propeller Availability

FAN SIZE	DIRECT DRIVE	BELT DRIVEN
14	E	—
16	E	—
18	E	—
21	E	L1, L2, E
24	E/Z	L1, L2, E/Z
30	E/Z	L1, L2, E/Z
36	E/Z	L1, L2, E/Z
42	E/Z	L1, L2, E/Z
48	E/Z	L1, L2, E/Z
54	—	L1, L2, C/Z
60	—	L1, L2, C/Z

"L1 & L2" Fabricated Steel Propelle

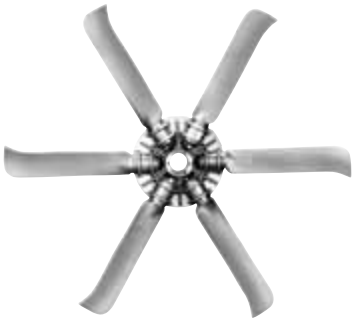
The "L1" and "L2" series features fixed pitch, fabricated steel, 5-bladed propellers. Galvanized steel propeller blades are riveted to galvanized steel hubs. Available in 8 sizes from 21" to 60" diameters in either standard L1 construction or reinforced L2 construction.

"E" Die Cast Aluminum Propellers

The "E" series features a die cast aluminum propeller available in 4 and 8 blade designs. Blade angles are factory set and mounted in a die cast aluminum hub. "E" propellers are available in 14" through 48" diameters.

"C" Cast Aluminum Propellers

The "C" series is a cast aluminum propeller available in 4 and 6 blade designs, and is available in 54" and 60" diameters only. Blade angles are factory set and mounted in a cast aluminum hub.



"Z" Fabricated Steel Propeller

The "Z" series features a fixed pitch, fabricated steel, 5-bladed propeller. Steel blades are continuously welded to a heavy gauge hub at the customer's selected blade angle. "Z" propellers are available in 24" through 60" diameters.

Model Comparison

Twin City Fan offers a full line of propeller fans available in both direct drive and belt driven. Each model and propeller type has been designed for a wide variety of commercial market applications. No matter what the requirements are, Twin City Fan has the propeller fan to suit the application.

Direct Drive

LEVEL	PROPELLER CONSTRUCTION	MODEL	SIZE RANGE	PERFORMANCE RANGE CFM	STATIC PRESSURE CAPABILITY	PERFORMANCE DATA LOCATION
1	Fabricated Aluminum Blades Riveted to Steel Hubs	TCPE	8-24	131 to 7,320	Up to 0.625 in w.g.	Bulletin 4800
3	Cast Aluminum Blades and Hubs	WPD	14-48	883 to 35,350	Up to 1.00 in w.g.	Pages 9-10
	Steel Blades and Hubs		24-48	3,100 to 32,200		
4	Cast Aluminum Blades and Hubs	TCWP	12-48	686 to 39,980	Up to 1.50 in w.g.	Bulletins AX500 & AX510-A
		TCWPX	24-60	1,640 to 72,000		

Belt Driven

LEVEL	PROPELLER CONSTRUCTION	MODEL	SIZE RANGE	PERFORMANCE RANGE CFM	STATIC PRESSURE CAPABILITY	PERFORMANCE DATA LOCATION
1	Galvanized Steel Blades Riveted to Galvanized Hubs	WPB L1	21-60	2,970 to 35,100	Up to 0.375 in w.g.	Pages 11-18
2	Reinforced Galvanized Steel Blades Riveted to Galvanized Hubs	WPB L2	21-60	3,450 to 47,600	Up to 0.75 in w.g.	Pages 11-18
3	Cast Aluminum Blades and Hubs	WPB L3	21-60	2,200 to 56,700	Up to 1.00 in w.g.	Pages 11-18
	Steel Blades and Hubs		24-60	3,300 to 62,800		Pages 12-18
4	Cast Aluminum Blades and Hubs	TCWP	24-48	3,600 to 38,000	Up to 1.50 in w.g.	Bulletins AX500 & AX510-A
		TCWPX	24-72	4,000 to 75,000		

Model Nomenclature

WPB - E - 24 - E4 - 16

Model
WPD = Wall Propeller Fan, Direct Drive
WPB = Wall Propeller Fan, Belt Driven

E = Exhaust, S = Supply

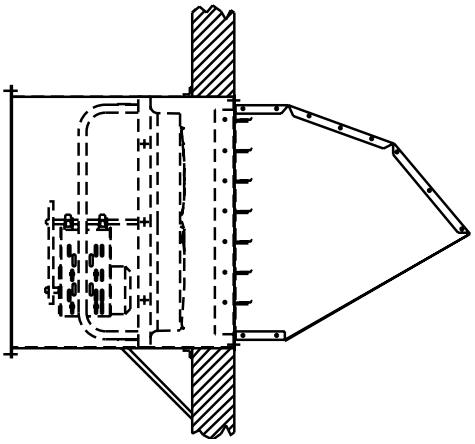
Fan Size

Propeller Type
L1 = Level 1, Fab. Steel
L2 = Level 2, Fab. Steel
E4 = Cast Alum., 4 Blade
E8 = Cast Alum., 8 Blade
C3 = Cast Alum., 3 Blade
C6 = Cast Alum., 6 Blade
Z5 = Fab. Steel, 5 Blade

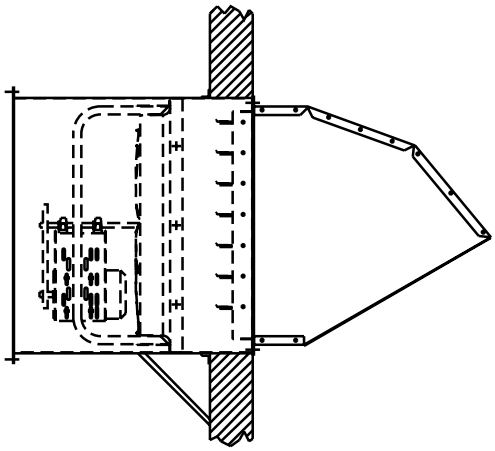
Blade Angle (E4, E8, C3, C6, Z5 Only)

Accessory Pressure Drops

Pressure Drop (in Wall Box with Backdraft Damper & Weatherhood)



EXHAUST FAN
in Wall Box with
Backdraft Damper & Weatherhood



SUPPLY FAN
in Wall Box with
Backdraft Damper & Weatherhood

FAN SIZE	CFM	PRESS. DROP (IN. W.G.)	
		EXHAUST	SUPPLY
14	1000	0.04	0.06
	1200	0.06	0.09
	1400	0.09	0.12
	1600	0.11	0.16
	1800	0.14	0.20
	2000	0.18	0.25
	2200	0.22	0.30
	2400	0.26	0.36
16	1600	0.07	0.10
	1800	0.09	0.12
	2000	0.11	0.15
	2200	0.13	0.18
	2400	0.15	0.21
	2600	0.18	0.25
	2800	0.21	0.29
	3000	0.24	0.34
	3500	0.32	0.46
18	2000	0.07	0.09
	2200	0.08	0.11
	2400	0.10	0.13
	2600	0.11	0.16
	2800	0.13	0.18
	3000	0.15	0.21
	3500	0.20	0.29
	4000	0.27	0.37
	4500	0.34	0.47
	5000	0.41	0.58
21	2400	0.05	0.07
	2600	0.06	0.09
	2800	0.07	0.10
	3000	0.08	0.11
	3500	0.11	0.16
	4000	0.15	0.20
	4500	0.18	0.26
	5000	0.23	0.32
	5500	0.27	0.39
	6000	0.33	0.46
	6500	0.38	0.54
24	3500	0.07	0.09
	4000	0.09	0.12
	4500	0.11	0.15
	5000	0.13	0.19
	6000	0.19	0.27
	7000	0.26	0.37
	8000	0.34	0.48
	9000	0.43	0.61
	10000	0.53	0.75

FAN SIZE	CFM	PRESS. DROP (IN. W.G.)	
		EXHAUST	SUPPLY
30	5000	0.05	0.08
	6000	0.08	0.11
	7000	0.11	0.15
	8000	0.14	0.20
	9000	0.18	0.25
	10000	0.22	0.31
	11000	0.26	0.37
	12000	0.31	0.44
	13000	0.37	0.52
	14000	0.43	0.60
	15000	0.49	0.69
36	7000	0.05	0.07
	8000	0.07	0.09
	9000	0.09	0.12
	10000	0.11	0.15
	11000	0.13	0.18
	12000	0.15	0.21
	13000	0.18	0.25
	14000	0.21	0.29
	16000	0.27	0.38
	18000	0.34	0.48
	20000	0.42	0.59
	22000	0.51	0.72
42	10000	0.06	0.08
	11000	0.07	0.10
	12000	0.08	0.12
	13000	0.10	0.14
	14000	0.11	0.16
	16000	0.15	0.21
	18000	0.19	0.26
	20000	0.23	0.32
	22000	0.28	0.39
	24000	0.33	0.46
	26000	0.39	0.55
	28000	0.45	0.63
48	14000	0.07	0.09
	16000	0.09	0.12
	18000	0.11	0.15
	20000	0.13	0.19
	22000	0.16	0.23
	24000	0.19	0.27
	26000	0.23	0.32
	28000	0.26	0.37
	30000	0.30	0.43
	32000	0.35	0.49
	34000	0.39	0.55
	36000	0.44	0.62

FAN SIZE	CFM	PRESS. DROP (IN. W.G.)	
		EXHAUST	SUPPLY
54	11000	0.03	0.04
	12000	0.03	0.04
	13000	0.04	0.05
	14000	0.04	0.06
	15000	0.05	0.07
	16000	0.05	0.08
	18000	0.07	0.10
	20000	0.08	0.12
	22000	0.10	0.14
	24000	0.12	0.17
	26000	0.14	0.20
	28000	0.17	0.23
	30000	0.19	0.27
	32000	0.22	0.30
	34000	0.24	0.34
	36000	0.27	0.39
	38000	0.30	0.43
	40000	0.34	0.48
	42000	0.37	0.52
	44000	0.41	0.58
60	12000	0.02	0.03
	13000	0.02	0.03
	14000	0.03	0.04
	15000	0.03	0.04
	16000	0.04	0.05
	18000	0.04	0.06
	20000	0.06	0.08
	22000	0.07	0.09
	24000	0.08	0.11
	26000	0.09	0.13
	28000	0.11	0.15
	30000	0.12	0.17
	32000	0.14	0.20
	34000	0.16	0.22
	36000	0.18	0.25
	38000	0.20	0.28
	40000	0.22	0.31
	42000	0.24	0.34
	44000	0.27	0.38
	46000	0.29	0.41
	50000	0.34	0.49
	52000	0.37	0.52
	54000	0.40	0.57
	56000	0.43	0.61
	58000	0.46	0.65

Accessories

Wall Box with Guard

The wall box is used to mount the fan and accessories cleanly into a wall, and provides the strongest and safest way to mount wall fans. Wall boxes are constructed of 16-gauge galvanized steel and are provided with heavy-gauge mounting flanges with prepunched mounting holes for ease of installation. Available fully assembled or as a kit (field assembly required) to reduce shipping costs.

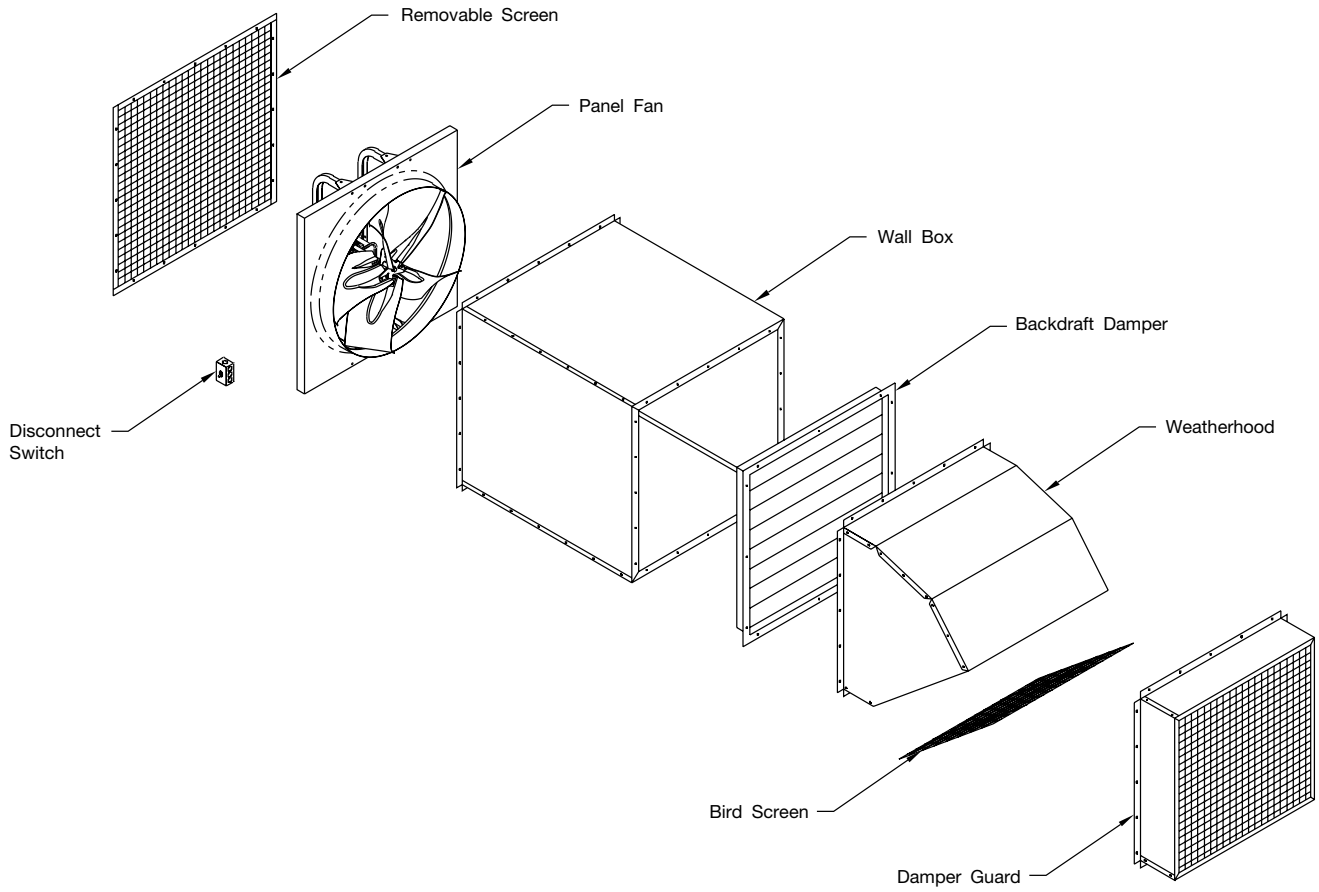
Disconnect Switch

A NEMA 1, 3R or 7/9 safety disconnect switch is available for positive electrical shutoff of the fan and the protection of service personnel. Disconnects are shipped loose for field mounting and wiring.

Backdraft Damper

Backdraft dampers are used to keep the elements and unwanted air out of the building when the fan is not in use. They are constructed to easily fasten to the wall box or wall collar so that the weatherhood or damper guard can easily fit over it. The frame is constructed of 20-gauge galvanized steel. Damper blades are constructed of 26-gauge mill finished aluminum. The leading edge of each damper blade is flanged with a vinyl seal for effective weather protection and quiet closing. The blades freely pivot open or close on stainless steel pivot pins. A motorized option is available.

Wall Box with Accessories



Accessories

Wall Collar

The wall collar is an economical alternative to the wall box. Wall collars are constructed of 16-gauge galvanized steel. Heavy-gauge mounting flanges with prepunched mounting holes are provided for ease of installation. Available fully assembled or as a kit (field assembly required) to reduce shipping costs. If motor side of fan is to be enclosed, add OSHA motor side guard.

Weatherhood

A weatherhood is available to keep snow and rain from entering the building and to prevent wind from altering the performance of the fan and backdraft damper. The weatherhood is designed to fit over the backdraft damper and can be installed to a wall collar via the mounting flanges and prepunched mounting holes. Weatherhoods are constructed of G90 galvanized steel and are standard with a removable galvanized steel, wire mesh, bird screen. Available fully assembled or as a kit (field assembly required) to reduce shipping costs. Weatherhoods are not weather tight when used with supply fans.

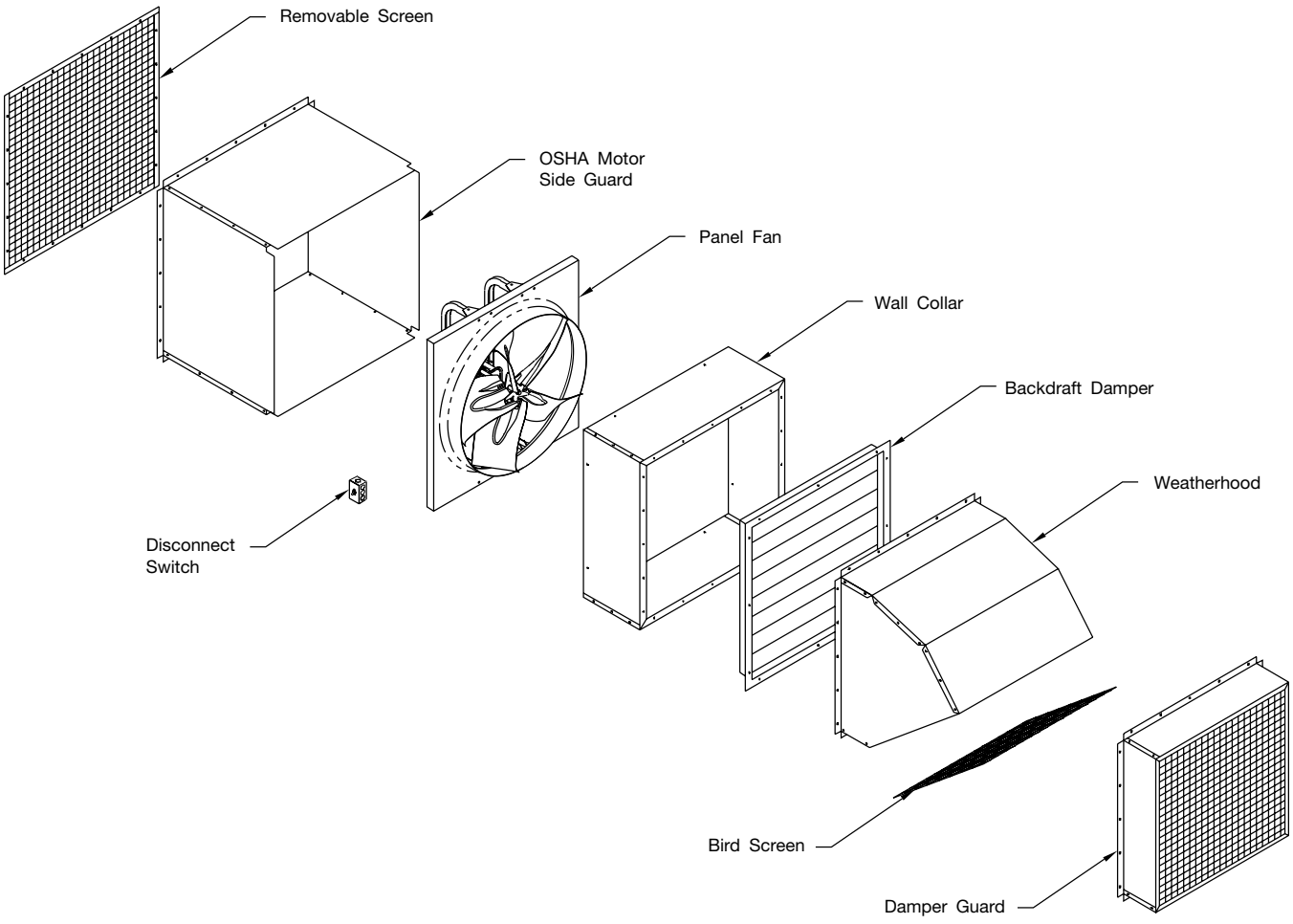
OSHA Motor Side Guard

The motor side guard meets OSHA standards by completely enclosing the motor and drive components. Motor side guards are constructed of galvanized steel side sheets and a removable wire mesh screen. Prepunched mounting holes allow for easy installation to the fan. (For use with or without a wall collar.)

Damper Guard

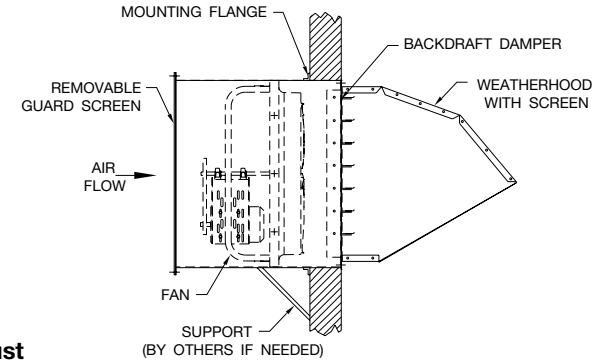
The damper guard is used to protect the backdraft damper when a weatherhood is not used. It is constructed of 18-gauge G90 galvanized steel side sheets and a galvanized steel screen. The screening complies with OSHA standards and will keep birds out of the fan and building. Mounting flanges and prepunched mounting holes are provided for ease of installation.

Wall Collar with Accessories

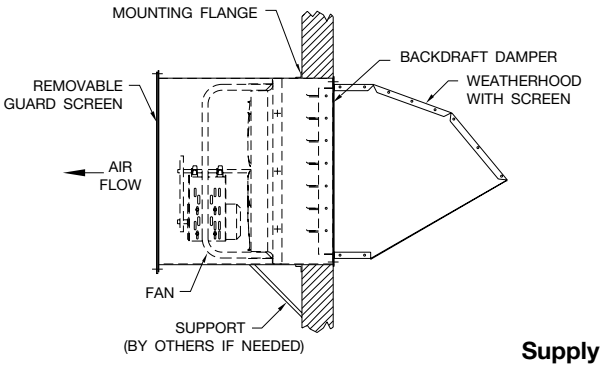


Mounting Arrangements

Flush with Outside Wall

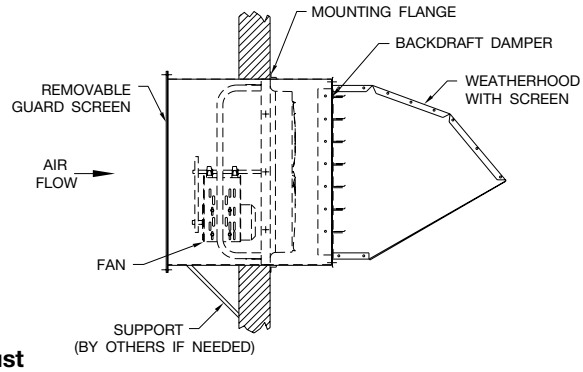


Exhaust

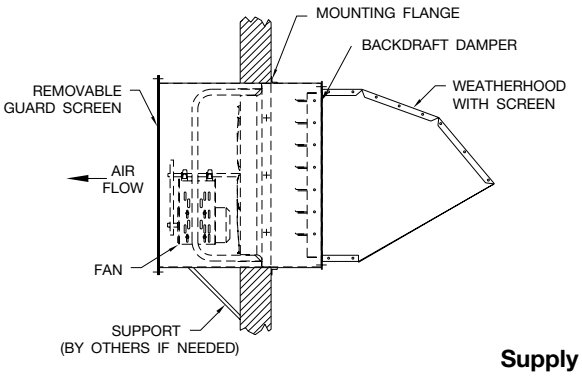


Supply

Middle of Wall

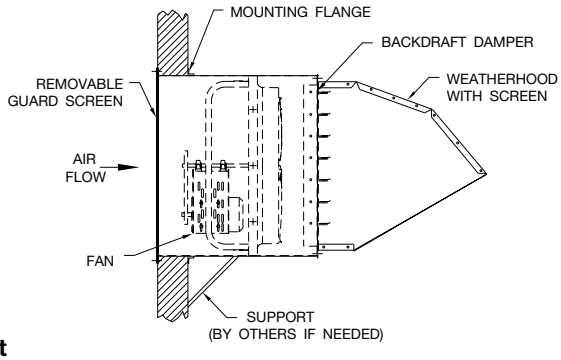


Exhaust

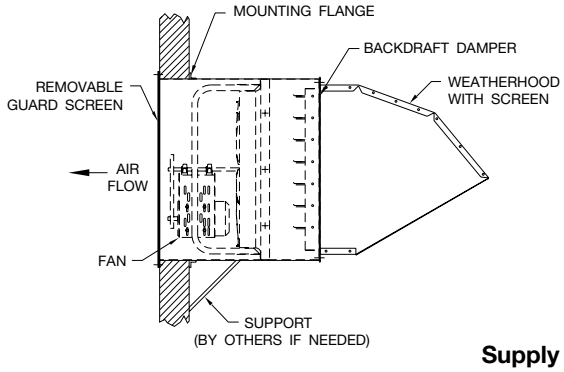


Supply

Flush with Interior Wall



Exhaust

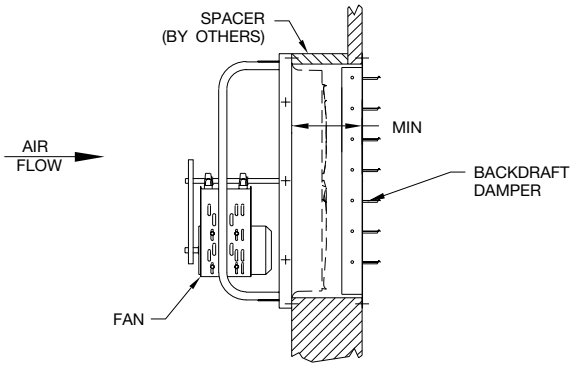


Supply

Mounting without Accessories

TO ACHIEVE THE MINIMUM DIMENSION, THIS INSTALLATION REQUIRES A SPACER (BY OTHERS) BETWEEN THE FAN AND THE WALL.

IF THE WALL IS EQUAL TO OR GREATER THAN THE MINIMUM DIMENSION, THE FAN CAN BE MOUNTED DIRECTLY TO THE WALL.



SIZE	MIN.
14	16
16	16
18	16
21	16
24	16
30	16
36	16
42	16
48	16
54	19
60	19

Dimensions are in inches.

Performance Data – Direct Drive

14 - 24 WPD

MODEL INFO			MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
SIZE	PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Max RPM E4 = 1750 E8 = 1750 Max Motor Frame Size = 56																		
14	E4 Cast Aluminum	20	1/4	1750	0.19	12.5	1911	1793	1760	1725	1649	1561	1456	1271	883			
		24		1750	0.22	13.0	2126	2002	1968	1931	1850	1755	1653	1480	1113			
		28		1750	0.26	13.8	2308	2172	2135	2097	2018	1931	1832	1637	1215			
		32	1/3	1750	0.31	14.9	2482	2325	2283	2241	2153	2061	1954	1741	1256			
	E8 Cast Aluminum	16	1/4	1750	0.21	14.6	1596	1529	1511	1493	1454	1412	1365	1286	1149			
		20		1750	0.26	15.0	1857	1783	1763	1743	1701	1657	1608	1527	1388	1178		
		24	1/3	1750	0.32	14.7	2121	2042	2022	2001	1956	1910	1860	1776	1622	1437		
Max RPM E4 = 1750 E8 = 1750 Max Motor Frame Size = 56																		
16	E4 Cast Aluminum	16	1/4	1750	0.23	18.1	2361	2217	2178	2138	2053	1962	1855	1643				
		20	1/3	1750	0.29	18.7	2709	2564	2524	2484	2397	2300	2193	2017	1604			
		24	1/2	1750	0.37	19.7	3040	2888	2847	2805	2715	2615	2504	2315	1933			
		28		1750	0.45	20	3367	3192	3146	3099	3002	2901	2794	2608	2186			
		32		1750	0.52	21	3617	3437	3390	3341	3238	3129	3011	2816	2406	1832		
	E8 Cast Aluminum	16	1/3	1750	0.34	13.6	2291	2210	2189	2167	2122	2075	2025	1943	1787	1591		
		20	1/2	1750	0.43	15.2	2698	2603	2579	2555	2505	2455	2404	2329	2194	1995	1695	
		24		1750	0.54	15.4	3085	3001	2979	2956	2909	2860	2808	2722	2551	2348	2091	
Max RPM E4 = 1750 E8 = 1750 Max Motor Frame Size = 56																		
18	E4 Cast Aluminum	16	1/3	1750	0.34	19.8	3295	3107	3059	3009	2908	2804	2696	2520	2174			
		20	1/2	1750	0.43	21	3768	3602	3558	3512	3416	3312	3194	3006	2687	2223		
		24		1750	0.54	23	4293	4081	4027	3974	3865	3757	3650	3479	3113	2689	2113	
		28	3/4	1750	0.65	24	4686	4499	4450	4400	4296	4187	4072	3887	3522	3067	2510	
		32		1750	0.80	23	5129	4928	4875	4822	4711	4597	4477	4286	3916	3447	2839	
	E8 Cast Aluminum	12	1/2	1750	0.42	24	2585	2476	2449	2421	2364	2306	2248	2158	1982	1760		
		16		1750	0.52	23	3162	3064	3039	3013	2960	2906	2850	2763	2606	2410	2134	
		20	3/4	1750	0.68	24	3761	3641	3611	3581	3523	3465	3407	3324	3196	3054	2762	
Max RPM E4 = 1750 E8 = 1750 Max Motor Frame Size = 145T																		
21	E4 Cast Aluminum	12	1/2	1750	0.40	25	3976	3712	3646	3580	3453	3327	3190	2940	2404			
		16		1750	0.53	27	4744	4513	4452	4390	4263	4128	3987	3761	3346			
		20	3/4	1750	0.71	29	5624	5391	5330	5268	5141	5009	4872	4653	4245	3740		
		24	1	1750	0.89	32	6328	6081	6017	5952	5817	5677	5530	5295	4881	4422	3750	
		28		1750	1.10	33	7042	6769	6699	6629	6484	6336	6185	5951	5528	5047	4432	
		32	1 1/2	1750	1.34	34	7644	7382	7313	7244	7103	6956	6804	6564	6121	5567	4932	
	E8 Cast Aluminum	12	3/4	1750	0.68	22	3773	3641	3607	3572	3501	3427	3349	3227	2999	2720	2413	
		16	1	1750	0.87	23	4725	4586	4551	4515	4443	4369	4295	4180	3987	3767	3478	
		20	1 1/2	1750	1.16	26	5661	5518	5482	5445	5372	5298	5224	5111	4926	4739	4517	3711
		24		1750	1.45	28	6524	6397	6365	6332	6264	6195	6123	6011	5810	5585	5326	4615
Max RPM E4 = 1750 E8 = 1750 Z5 = 1750 Max Motor Frame Size = 184T																		
24	E4 Cast Aluminum	12	1/2	1750	0.55	36	5320	5008	4925	4841	4665	4476	4281	3979	3427			
		16	3/4	1750	0.80	37	6722	6406	6325	6244	6078	5908	5736	5466	4966	4386	3661	
		20	1	1750	1.06	40	7842	7545	7468	7390	7228	7059	6882	6596	6096	5565	4904	
		24	1 1/2	1750	1.37	42	8950	8637	8556	8475	8309	8139	7964	7694	7212	6665	6043	
		28	2	1750	1.70	46	9914	9605	9525	9444	9278	9108	8931	8652	8148	7624	7068	
		32		1750	2.15	47	10932	10611	10528	10445	10276	10103	9927	9654	9175	8661	8119	6528
	E8 Cast Aluminum	12	1	1750	0.98	40	5260	5103	5062	5020	4933	4841	4745	4586	4278	3928	3553	
		16	1 1/2	1750	1.34	39	6720	6527	6479	6430	6332	6234	6136	5987	5747	5494	5181	4324
		20	2	1750	1.76	42	8101	7936	7894	7851	7765	7677	7586	7447	7205	6948	6668	5930
		24		1750	2.22	47	9392	9216	9171	9126	9034	8941	8846	8701	8450	8191	7920	7252
	Z5 Fabricated Steel	30	1/4	860	0.22	14.3	4461	3997	3887	3778	3527	3137						
		35	1/3	860	0.32	14.5	5295	4872	4749	4615	4304	3913	3350					
		40	1/2	860	0.42	15.6	6140	5661	5520	5360	4985	4623	4173					
		45		860	0.50	16.4	6703	6163	6010	5844	5471	5030						
		30	1/2	1160	0.54	24	6017	5673	5587	5501	5332	5170	5005	4705				
		35	3/4	1160	0.77	25	7142	6844	6764	6681	6507	6319	6109	5749	4951			
		40	1	1160	1.02	27	8281	7945	7855	7761	7562	7343	7087	6661	5979			
		45	1 1/2	1160	1.24	28	9041	8659	8557	8452	8233	7997	7742	7312	6410			
		30	2	1750	1.89	46	9077	8849	8792	8735	8621	8507	8393	8223	7947	7680	7391	6544

NOTES:

1. Performance certified is for installation type A: Free inlet, free outlet.
2. Performance ratings do not include the effects of appurtenances (accessories).
3. The sound ratings shown are loudness values in fan sone at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
4. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Direct Drive

30 – 48 WPD

MODEL INFO			MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
SIZE	PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Max RPM E4 = 1750 E8 = 1750 Z5 = 1160 Max Motor Frame Size = 184T																		
30	E4 Cast Aluminum	12	3/4	1160	0.68	29	7308	6811	6681	6548	6273	5984	5683	5197				
		16	1	1160	0.92	28	8876	8353	8221	8088	7821	7556	7283	6843	5965			
		20	1 1/2	1160	1.20	30	10346	9890	9771	9650	9401	9142	8872	8439	7629	6565		
		24		1160	1.54	30	11830	11344	11218	11089	10826	10553	10268	9817	9007	8029	6540	
		28	2	1160	1.92	33	13346	12845	12716	12584	12313	12034	11744	11287	10437	9409	8064	
	E8 Cast Aluminum	12	1 1/2	1160	1.12	31	7126	6857	6786	6714	6564	6407	6239	5966	5430			
		16		1160	1.45	32	8774	8520	8454	8386	8247	8102	7950	7706	7242	6696		
		20	2	1160	1.93	32	10678	10361	10281	10201	10040	9877	9713	9467	9069	8627	7961	
	Z5 Fabricated Steel	30	1/2	860	0.46	19.3	7877	7049	6878	6717	6385	5980	5477					
		35	3/4	860	0.65	19.4	9238	8568	8395	8220	7877	7505	6996	5996				
		40	1	860	0.89	20	10821	10070	9869	9662	9230	8761	8246	7243				
		45		860	1.08	21	11760	10955	10741	10522	10066	9579	9071	8089				
		30	1 1/2	1160	1.14	30	10624	9978	9829	9686	9414	9169	8932	8552	7752	6515		
		35		1160	1.60	30	12461	11969	11844	11719	11464	11206	10950	10568	9818	8653	7222	
		40	2	1160	2.17	31	14596	14052	13911	13768	13476	13174	12863	12375	11479	10428		
Max RPM E4 = 1750 E8 = 1750 Z5 = 1160 Max Motor Frame Size = 215T																		
36	E4 Cast Aluminum	12	1	1160	1.04	41	10005	9294	9114	8933	8575	8208	7817	7177				
		16	1 1/2	1160	1.38	39	12415	11752	11582	11410	11060	10706	10341	9752	8613	7205		
		20	2	1160	1.86	43	15239	14648	14493	14334	14005	13658	13286	12678	11562	10278	8753	
		24	3	1160	2.44	44	17666	17043	16881	16715	16374	16019	15644	15035	13948	12819	11431	
		28		1160	3.15	48	20116	19482	19317	19149	18804	18444	18069	17460	16335	15184	13870	
	E8 Cast Aluminum	12	2	1160	1.84	41	10148	9681	9564	9448	9215	8984	8762	8422	7719			
		16	3	1160	2.45	48	12968	12627	12538	12447	12259	12062	11855	11519	10847	10113	9341	
		20		1160	3.31	51	15986	15625	15532	15438	15247	15051	14849	14535	13977	13367	12666	10750
	Z5 Fabricated Steel	30	1 1/2	860	1.15	27	13611	12583	12351	12130	11730	11345	10927	10170	8241			
		35		860	1.61	28	15963	15165	14961	14755	14338	13925	13511	12813	11002			
		40	2	860	2.20	28	18699	17812	17580	17344	16857	16350	15819	14960	13273			
		45	3	860	2.71	29	20322	19369	19121	18869	18351	17815	17258	16369	14788			
		30	3	1160	2.81	43	18359	17566	17380	17198	16846	16509	16195	15759	15033	14169	13121	
Max RPM E4 = 1160 E8 = 1160 Z5 = 860 Max Motor Frame Size = 254T																		
42	E4 Cast Aluminum	12	1 1/2	860	1.32	27	13985	13003	12747	12488	11959	11408	10826	9873				
		16	2	860	1.77	28	17074	16069	15814	15558	15045	14534	14008	13149				
		24	3	860	3.03	31	23132	22197	21953	21705	21196	20667	20111	19229	17656	15814	13085	
		28	5	860	3.80	37	26159	25203	24954	24701	24182	23642	23079	22184	20539	18632	16081	
		32		860	4.57	41	28752	27691	27418	27140	26574	25991	25391	24461	22750	20684	18163	
	E8 Cast Aluminum	12	2	860	2.22	24	13769	13218	13074	12928	12626	12311	11983	11458	10403			
		16	3	860	2.88	27	17111	16617	16488	16356	16084	15801	15503	15021	14097	13034		
		20	5	860	3.89	31	20894	20304	20154	20003	19698	19388	19074	18597	17804	16931	15701	12575
		24		860	4.94	30	23995	23492	23362	23231	22961	22684	22396	21946	21132	20214	19115	15785
	Z5 Fabricated Steel	30	3	860	3.15	35	21994	21428	21278	21125	20807	20471	20112	19515	18229	16809	15127	
		35	5	860	4.30	38	27263	25785	25480	25192	24657	24183	23773	23203	22221	20821	18852	
Max RPM E4 = 1160 E8 = 1160 Z5 = 860 Max Motor Frame Size = 254T																		
48	E4 Cast Aluminum	12	2	860	1.79	42	17582	16303	15979	15655	15010	14348	13637	12468				
		16	3	860	2.37	41	21818	20625	20319	20008	19378	18740	18080	17009	14925	12354		
		20		860	3.20	47	26780	25717	25437	25150	24555	23927	23252	22149	20122	17773	14943	
		24	5	860	4.18	46	31044	29924	29631	29332	28717	28075	27396	26291	24331	22278	19685	
		28		860	5.40	53	35350	34210	33912	33610	32986	32337	31657	30550	28516	26440	23972	
	E8 Cast Aluminum	12	3	860	3.14	45	17833	16994	16784	16574	16155	15742	15343	14728				
		16	5	860	4.21	51	22788	22175	22014	21850	21510	21155	20780	20168	18942	17620	16204	
		20	5	860	5.56	51	28093	27444	27277	27108	26763	26408	26044	25476	24467	23356	22064	
	Z5 Fabricated Steel	30	5	860	4.83	47	32263	30838	30504	30178	29548	28944	28386	27605	26290	24703	22762	

NOTES:
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4. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

21 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 1085							Max Motor Frame Size = 56							
L1 Fabricated Steel	—	1/4	729	0.22	10.7	4200	3693	3473	3231								
			761	0.25	11.4	4384	3915	3728	3497	2974							
			785	0.28	12.0	4522	4077	3911	3693	3220							
	—	1/3	812	0.30	12.7	4678	4254	4108	3913	3473							
			837	0.33	13.4	4822	4417	4283	4110	3691	3182						
			864	0.37	14.1	4978	4590	4467	4314	3917	3460						
	—	1/2	914	0.43	15.2	5266	4906	4797	4672	4326	3938	3454					
			959	0.50	16.9	5525	5187	5087	4977	4688	4321	3919					
			989	0.55	17.2	5698	5373	5278	5174	4917	4568	4204					
Level 2 Performance			Max RPM L2 = 1241							Max Motor Frame Size = 145T							
L2 Fabricated Steel	—	1/2	914	0.43	15.2	5266	4906	4797	4672	4326	3938	3454					
			959	0.50	16.9	5525	5187	5087	4977	4688	4321	3919					
			989	0.55	17.2	5698	5373	5278	5174	4917	4568	4204					
	—	3/4	1046	0.65	19.3	6026	5723	5636	5543	5329	5033	4696	4113				
			1097	0.75	21	6320	6034	5953	5868	5677	5432	5115	4620				
			1133	0.83	22	6527	6252	6175	6094	5916	5699	5409	4941				
Level 3 Performance			Max RPM E4 = 1890 E8 = 1280							Max Motor Frame Size = 145T							
E4 Cast Aluminum	20	1/4	1309	0.27	15.9	3960	3641	3556	3468	3286	3093	2890	2458				
	28		1116	0.27	14.6	4432	4004	3894	3784	3551	3282	2968	2262				
	32		1043	0.28	13.6	4529	4118	3989	3835	3527	3247	2875					
	20	1/3	1440	0.37	18.4	4356	4068	3993	3916	3756	3587	3411	3130				
	28		1228	0.37	16.8	4876	4490	4390	4290	4089	3871	3625	3190				
	32		1147	0.37	15.8	4980	4616	4511	4393	4106	3838	3584	3060				
	20	1/2	1650	0.55	23	4991	4743	4678	4613	4478	4339	4195	3967	3559			
	28		1407	0.55	22	5587	5252	5166	5079	4905	4730	4546	4238	3611			
	32		1314	0.55	19.5	5705	5397	5311	5220	5018	4769	4521	4192	3447			
	20	3/4	1888	0.82	29	5711	5495	5440	5384	5269	5152	5032	4845	4515	4165	3693	
	28		1610	0.82	25	6393	6101	6027	5952	5801	5649	5497	5261	4815	4278	3551	
	32		1504	0.82	24	6530	6266	6195	6121	5964	5790	5583	5248	4764	4138		
E8 Cast Aluminum	32	1/4	886	0.28	12.0	4154	3811	3721	3630	3441	3200	2860					
	32	1/3	975	0.37	14.2	4571	4262	4182	4099	3934	3758	3536	3072				
	32	1/2	1116	0.55	17.0	5232	4965	4896	4825	4682	4538	4389	4127	3466			
	32	3/4	1278	0.83	22	5991	5760	5700	5640	5518	5392	5267	5075	4695	4121		

NOTES:

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Performance Data – Belt Driven

24 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 907							Max Motor Frame Size = 56							
L1 Fabricated Steel	—	1/4	584	0.22	9.6	5022	4219	3874	3476								
			609	0.25	10.3	5237	4508	4183	3843								
			629	0.28	10.6	5409	4729	4427	4108								
	—	1/3	651	0.30	11.4	5599	4961	4694	4384	3650							
			671	0.33	12.2	5771	5166	4928	4629	3963							
			692	0.37	12.9	5951	5375	5164	4886	4281							
	—	1/2	732	0.43	13.9	6295	5765	5590	5363	4816	4150						
			768	0.50	15.2	6605	6109	5953	5766	5263	4703						
			809	0.59	16.3	6957	6495	6354	6197	5763	5264	4658					
	—	3/4	838	0.65	17.1	7207	6765	6633	6489	6109	5630	5102					
			879	0.75	18.5	7559	7143	7022	6891	6573	6132	5672					
			907	0.83	19.5	7800	7400	7285	7161	6874	6474	6030					
Level 2 Performance			Max RPM L2 = 986							Max Motor Frame Size = 145T							
L2 Fabricated Steel	—	1/2	732	0.43	13.9	6295	5765	5590	5363	4816	4150						
			768	0.50	15.2	6605	6109	5953	5766	5263	4703						
			809	0.59	16.3	6957	6495	6354	6197	5763	5264	4658					
	—	3/4	838	0.65	17.1	7207	6765	6633	6489	6109	5630	5102					
			879	0.75	18.5	7559	7143	7022	6891	6573	6132	5672					
			907	0.83	19.5	7800	7400	7285	7161	6874	6474	6030	5247				
	—	1	938	0.91	20	8067	7682	7573	7457	7195	6843	6413	5721				
			967	1.00	22	8316	7945	7841	7731	7486	7174	6767	6132				
			986	1.06	22	8480	8117	8016	7909	7674	7384	7000	6384				
Level 3 Performance			Max RPM E4 = 1930 E8 = 1175 Z5 = 1450							Max Motor Frame Size = 145T							
E4 Cast Aluminum	16	1/3	1336	0.37	25	4987	4596	4493	4390	4177	3947	3690	3232				
	24		1110	0.37	20	5644	5103	4970	4841	4571	4254	3890	3221				
	32		964	0.37	16.5	5904	5276	5110	4940	4571	4150	3683					
	16	1/2	1531	0.55	32	5715	5376	5289	5200	5019	4835	4640	4317	3657			
	24		1272	0.55	25	6468	5996	5878	5761	5533	5300	5039	4583				
	32		1104	0.55	21	6761	6219	6077	5933	5638	5319	4966	4383				
	16	3/4	1752	0.82	43	6540	6246	6171	6094	5940	5782	5622	5372	4905	4341	3582	
	24		1456	0.82	32	7404	6991	6888	6785	6580	6381	6181	5855	5196	4388		
	32		1263	0.82	26	7735	7265	7143	7020	6769	6512	6241	5794	4946			
	16	1	1929	1.10	52	7201	6935	6867	6798	6659	6518	6375	6157	5770	5330	4815	
	24		1602	1.10	39	8146	7771	7677	7583	7396	7211	7031	6757	6237	5614	4873	
	32		1391	1.10	30	8518	8094	7985	7875	7650	7421	7187	6816	6115	5311		
E8 Cast Aluminum	32	1/3	813	0.37	14.0	5545	5107	4984	4855	4571	4203	3688					
	32	1/2	931	0.55	17.0	6350	5975	5874	5768	5545	5300	5012	4399				
	32	3/4	1066	0.82	21	7271	6949	6863	6775	6592	6398	6191	5839	4968			
	32	1	1173	1.10	24	8001	7710	7634	7556	7395	7227	7050	6766	6185	5318		
Z5 Fabricated Steel	30	1/3	1004	0.37	18.9	5239	4811	4708	4610	4423	4219	3952	3326				
	45		766	0.37	14.7	5851	5210	5048	4879	4384							
	30	1/2	1150	0.55	23	6001	5624	5533	5443	5270	5107	4937	4622	3721			
	45		878	0.55	18.5	6707	6154	6009	5867	5574	5177	4482					
	30	3/4	1316	0.82	28	6867	6536	6455	6375	6217	6065	5922	5705	5250	4531		
	45		1005	0.82	23	7677	7198	7074	6948	6698	6446	6149	5366				
	30	1	1448	1.10	32	7556	7254	7180	7107	6962	6818	6681	6485	6146	5696	5035	
	45		1106	1.10	27	8449	8015	7904	7791	7562	7336	7107	6689				

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Performance Data – Belt Driven

30 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 696							Max Motor Frame Size = 145T							
L1 Fabricated Steel	—	1/4	402	0.22	7.9	6752	5014										
			420	0.25	8.4	7054	5466	4765									
			433	0.28	8.9	7273	5780	5154									
	—	1/3	448	0.30	9.4	7525	6138	5568	4833								
			462	0.33	9.7	7760	6471	5925	5276								
			477	0.37	10.0	8012	6817	6292	5723								
	—	1/2	504	0.43	11.3	8465	7406	6937	6438								
			529	0.50	12.2	8885	7917	7524	7048	5959							
			546	0.55	13.0	9171	8252	7905	7453	6468							
	—	3/4	577	0.65	14.3	9691	8846	8560	8185	7309	6186						
			605	0.75	15.4	10162	9371	9120	8809	7998	7066						
			625	0.83	16.4	10498	9741	9507	9232	8475	7645						
	—	1	646	0.91	17.4	10850	10126	9907	9659	8977	8194	7242					
			666	1.00	18.6	11186	10490	10283	10054	9445	8690	7840					
			696	1.20	20	11690	11032	10840	10631	10116	9409	8677					
Level 2 Performance			Max RPM L2 = 950							Max Motor Frame Size = 184T							
L2 Fabricated Steel	—	3/4	577	0.65	14.3	9691	8846	8560	8185	7309	6186						
			605	0.75	15.4	10162	9371	9120	8809	7998	7066						
			625	0.83	16.4	10498	9741	9507	9232	8475	7645						
	—	1	646	0.91	17.4	10850	10126	9907	9659	8977	8194	7242					
			666	1.00	18.6	11186	10490	10283	10054	9445	8690	7840					
			696	1.20	20	11690	11032	10840	10631	10116	9409	8677					
	—	1 1/2	727	1.30	22	12211	11587	11408	11216	10770	10149	9457	8239				
			762	1.50	23	12799	12209	12043	11866	11471	10954	10297	9268				
			787	1.65	24	13218	12651	12493	12325	11956	11500	10895	9929				
	—	2	814	1.83	25	13672	13127	12976	12817	12472	12065	11529	10602	8666			
			839	2.00	27	14092	13566	13421	13270	12942	12570	12095	11205	9500			
			866	2.20	28	14545	14038	13899	13755	13445	13100	12681	11849	10307			
Level 3 Performance			Max RPM E4 = 1565 E8 = 975 Z5 = 1295							Max Motor Frame Size = 184T							
E4 Cast Aluminum	16	1/2	984	0.55	23	7327	6784	6639	6491	6180	5844	5475	4789				
	24		827	0.55	18.1	8262	7546	7358	7168	6772	6311	5752					
	32		716	0.55	15.2	8790	7914	7661	7390	6802	6118	5070					
	16	3/4	1126	0.82	28	8384	7915	7792	7667	7408	7138	6853	6385	5392			
	24		946	0.83	22	9451	8831	8670	8506	8175	7832	7450	6765				
	32		820	0.83	18.8	10066	9320	9115	8900	8431	7920	7368	6148				
	16	1	1239	1.10	33	9226	8802	8692	8581	8351	8114	7868	7477	6739	5751		
	24		1041	1.10	26	10400	9839	9695	9548	9250	8949	8636	8110	6981			
	32		902	1.10	22	11073	10404	10223	10036	9638	9202	8736	7972				
	16	1 1/2	1418	1.65	43	10558	10191	10097	10001	9806	9606	9401	9083	8515	7879	7114	
	24		1191	1.65	34	11898	11411	11286	11161	10905	10645	10382	9979	9217	8259	6908	
	32		1033	1.65	27	12681	12105	11953	11797	11472	11127	10756	10157	9047	7307		
	16	2	1561	2.19	51	11623	11291	11206	11120	10946	10768	10586	10306	9818	9290	8710	7186
	24		1311	2.20	42	13097	12656	12544	12430	12201	11968	11731	11373	10750	10025	9149	
	32		1137	2.20	33	13958	13438	13302	13164	12879	12580	12266	11758	10834	9771	8136	
	24	3	1502	3.30	54	15005	14621	14524	14426	14229	14029	13827	13518	12998	12458	11861	10374
	28		1393	3.30	48	15556	15144	15039	14933	14716	14496	14270	13921	13308	12650	11943	10089
	32		1302	3.31	45	15983	15533	15417	15299	15058	14810	14553	14149	13413	12610	11747	9125
E8 Cast Aluminum	32	1/2	614	0.55	15.6	8105	7584	7426	7249	6764	6091	5383					
	32	3/4	703	0.82	19.1	9280	8841	8715	8581	8277	7866	7336	6354				
	32	1	774	1.10	22	10218	9825	9717	9603	9354	9065	8688	7952	6569			
	32	1 1/2	886	1.64	26	11696	11360	11269	11176	10978	10763	10525	10077	9014	7765		
	32	2	975	2.19	31	12871	12568	12488	12406	12234	12051	11855	11527	10772	9727	8596	
Z5 Fabricated Steel	35	1/2	815	0.55	18.9	8549	7905	7724	7530	7094	6605	6038					
	45		682	0.55	15.3	9232	8192	7923	7643	7002							
	35	3/4	933	0.82	24	9787	9237	9087	8931	8596	8218	7804	7107				
	45		781	0.82	19.3	10572	9673	9439	9205	8718	8164	7464					
	35	1	1027	1.10	27	10773	10279	10147	10011	9724	9412	9067	8500	7359			
	45		859	1.10	22	11627	10816	10605	10392	9964	9513	9005					
	35	1 1/2	1174	1.63	34	12315	11889	11776	11662	11424	11174	10909	10471	9647	8676		
	45		984	1.64	28	13319	12616	12435	12252	11881	11508	11125	10485				
	35	2	1294	2.18	40	13574	13190	13090	12988	12778	12561	12334	11971	11287	10521	9637	
	45		1082	2.19	32	14646	14008	13845	13681	13347	13008	12670	12144	11138			
	45	3	1240	3.30	40	16785	16231	16090	15948	15661	15371	15076	14633	13869	13000	11927	

NOTES:
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

36 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 551								Max Motor Frame Size = 145T						
L1 Fabricated Steel	—	1/3	347	0.30	8.5	9180	6714	6019	5365								
			358	0.33	9.1	9471	7149	6399	5808								
			369	0.37	9.7	9762	7576	6788	6207								
	—	1/2	390	0.43	10.2	10317	8339	7586	6935	5687							
			410	0.50	11.2	10846	9034	8373	7647	6576							
			423	0.55	11.7	11190	9475	8860	8145	7058	5518						
	—	3/4	447	0.65	13.2	11825	10262	9707	9090	7893	6884						
			469	0.75	14.1	12407	10958	10461	9907	8667	7750	6447					
			484	0.83	14.9	12804	11420	10960	10436	9232	8280	7285					
	—	1	500	0.91	15.8	13227	11905	11481	10991	9861	8832	7970					
			516	1.00	16.5	13650	12383	11989	11535	10490	9390	8570					
			533	1.10	17.4	14100	12885	12519	12099	11131	10011	9167	7730				
Level 2 Performance			Max RPM L1 = 693								Max Motor Frame Size = 184T						
L2 Fabricated Steel	—	1	500	0.91	15.8	13227	11905	11481	10991	9861	8832	7970					
			516	1.00	16.5	13650	12383	11989	11535	10490	9390	8570					
			533	1.10	17.4	14100	12885	12519	12099	11131	10011	9167	7730				
	—	1 1/2	563	1.30	19.1	14894	13761	13430	13063	12194	11182	10207	9066				
			591	1.50	21	15634	14567	14262	13932	13156	12264	11238	10079				
			610	1.65	22	16137	15110	14819	14509	13791	12951	11983	10736	8609			
	—	2	631	1.83	23	16692	15706	15430	15137	14475	13688	12810	11467	9684			
			650	2.00	23	17195	16243	15978	15699	15081	14344	13531	12156	10465			
			671	2.20	25	17751	16833	16580	16315	15736	15053	14285	12963	11237	8890		
Level 3 Performance			Max RPM E4 = 1395 E8 = 915 Z5 = 1095								Max Motor Frame Size = 184T						
E4 Cast Aluminum	20	3/4	877	0.82	26	11363	10424	10186	9949	9473	8958	8380	7383				
	28		738	0.83	24	12837	11770	11469	11142	10425	9705	8913	7195				
	32		686	0.82	23	13129	11907	11569	11216	10441	9525	8416					
	20	1	966	1.10	31	12516	11666	11450	11234	10805	10369	9900	9107				
	28		812	1.10	27	14124	13171	12909	12634	12026	11366	10713	9608				
	32		755	1.10	27	14450	13355	13058	12751	12098	11372	10534	8991				
	20	1 1/2	1105	1.65	40	14317	13576	13388	13200	12822	12447	12071	11474	10325	8946		
	28		930	1.65	31	16176	15359	15140	14914	14438	13911	13341	12481	10879			
	32		865	1.65	31	16555	15614	15364	15108	14574	14009	13399	12358	10134			
	20	2	1217	2.20	46	15769	15096	14926	14756	14414	14071	13731	13217	12282	11201	9944	
	28		1023	2.20	34	17794	17058	16863	16664	16249	15809	15327	14549	13245	11673	9271	
	32		952	2.20	34	18220	17372	17149	16922	16453	15963	15447	14610	12946	10754		
	20	3	1392	3.29	61	18036	17449	17301	17153	16856	16557	16257	15809	15060	14251	13345	11189
	28		1171	3.30	43	20368	19732	19566	19397	19050	18689	18313	17701	16574	15439	14203	
	32		1089	3.30	41	20842	20107	19917	19723	19328	18919	18496	17832	16616	15183	13454	
	28	5	1391	5.47	59	24195	23664	23527	23389	23108	22819	22523	22062	21235	20311	19344	
	32		1292	5.47	53	24728	24113	23955	23796	23473	23142	22805	22283	21368			
E8 Cast Aluminum	32	3/4	575	0.83	19.7	12118	11223	10974	10711	10137	9453	8555					
	32	1	633	1.10	24	13340	12540	12321	12095	11610	11073	10448	9202				
	32	1 1/2	724	1.65	30	15258	14569	14386	14197	13803	13382	12928	12155	10357			
	32	2	797	2.20	34	16797	16176	16013	15846	15501	15138	14754	14132	12876	11072		
	32	3	913	3.30	40	19241	18705	18565	18424	18134	17833	17521	17029	16128	15061	13665	
Z5 Fabricated Steel	35	3/4	688	0.82	20	12471	11558	11301	11028	10416	9730	8948					
	45		576	0.82	16.6	13473	11997	11615	11221	10325							
	35	1	757	1.09	23	13722	12905	12681	12448	11940	11367	10741	9653				
	45		634	1.10	19.1	14829	13499	13152	12805	12072	11228						
	35	1 1/2	868	1.64	29	15734	15034	14847	14654	14250	13811	13329	12533	10966			
	45		726	1.65	24	16981	15829	15531	15229	14622	13990	13279	11944				
	35	2	954	2.19	34	17293	16662	16495	16325	15971	15597	15197	14533	13288	11760		
	45		799	2.19	28	18689	17647	17379	17108	16558	16006	15430	14457				
	35	3	1092	3.26	43	19795	19248	19106	18962	18665	18357	18036	17525	16565	15487	14265	
	45		915	3.30	34	21402	20497	20266	20033	19561	19080	18600	17861	16458			
	45	5	1084	5.49	47	25355	24595	24402	24208	23817	23420	23018	22409	21384	20257	18990	

NOTES:
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

42 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 424							Max Motor Frame Size = 145T							
L1 Fabricated Steel	—	1/3	268	0.30	7.6	11258	7436	6416									
			276	0.33	7.8	11594	7876	6962									
			285	0.37	8.3	11972	8385	7501	6282								
	—	1/2	302	0.43	9.2	12686	9425	8444	7604								
			316	0.50	9.8	13275	10295	9223	8432								
			327	0.55	10.4	13737	10941	9874	9040	7033							
	—	3/4	345	0.65	11.6	14493	11945	10999	10037	8537							
			362	0.75	12.4	15207	12865	12026	11050	9574	7438						
			374	0.83	13.2	15711	13497	12704	11802	10242	8676						
	—	1	387	0.91	14.1	16257	14164	13425	12607	10955	9630						
			399	1.00	14.5	16761	14766	14077	13315	11625	10374	8445					
			411	1.10	15.0	17265	15356	14716	13990	12331	11056	9614					
Level 2 Performance			Max RPM L2 = 723							Max Motor Frame Size = 184T							
L2 Fabricated Steel	—	1	387	0.91	14.1	16257	14164	13425	12607	10955	9630						
			399	1.00	14.5	16761	14766	14077	13315	11625	10374	8445					
			411	1.10	15.0	17265	15356	14716	13990	12331	11056	9614					
	—	1 1/2	435	1.30	16.8	18273	16510	15953	15309	13825	12376	11241					
			456	1.50	18.0	19156	17498	16997	16423	15101	13575	12431	10445				
			471	1.65	19.0	19786	18196	17726	17196	15953	14494	13253	11595				
	—	2	487	1.83	20	20458	18933	18490	18001	16843	15498	14143	12607				
			502	2.00	21	21088	19620	19197	18741	17661	16420	15019	13465				
			518	2.20	22	21760	20347	19945	19516	18516	17354	16005	14347	11225			
	—	3	548	2.60	24	23020	21699	21330	20940	20066	19024	17872	16012	13664			
			575	3.00	26	24155	22905	22561	22199	21412	20482	19435	17635	15286	12083		
			593	3.30	27	24911	23705	23375	23030	22288	21426	20437	18765	16285	13858		
	—	5	640	4.15	31	26885	25779	25481	25172	24518	23798	22971	21568	18909	16928	14316	
			681	5.00	33	28607	27576	27300	27016	26421	25781	25072	23837	21433	19193	17362	
			703	5.50	35	29532	28535	28270	27998	27430	26823	26164	25020	22801	20417	18653	
Level 3 Performance			Max RPM E4 = 965 E8 = 660 Z5 = 870							Max Motor Frame Size = 215T							
E4 Cast Aluminum	20	1	669	1.10	21	15505	14110	13772	13446	12793	12071	11260	9539				
	28		568	1.09	16.8	16914	15395	14975	14534	13584	12559	11264					
	32		530	1.09	16.3	17354	15657	15171	14651	13514	12200	10287					
	20	1 1/2	768	1.65	26	17799	16579	16279	15982	15410	14844	14242	13229	10810			
	28		651	1.65	21	19386	18085	17735	17375	16611	15787	14915	13412				
	32		608	1.65	21	19908	18464	18068	17654	16758	15775	14704	12521				
	20	2	841	2.19	30	19491	18374	18099	17825	17287	16770	16253	15415	13776			
	28		718	2.20	25	21381	20213	19904	19587	18927	18223	17475	16286	13676			
	32		668	2.19	24	21873	20574	20225	19864	19099	18264	17365	15882	12150			
	20	3	964	3.28	38	22342	21364	21122	20882	20405	19933	19478	18805	17594	16199	14294	
	28		820	3.29	30	24419	23406	23142	22874	22321	21744	21139	20176	18442	16266		
	32		767	3.30	30	25115	23999	23705	23404	22779	22118	21411	20266	18128	14979		
	32	5	909	5.51	38	29764	28834	28593	28348	27846	27327	26788	25934	24373	22660	20658	
E8 Cast Aluminum	32	1	453	1.09	13.9	16053	14991	14675	14325	13421	12231	10819					
	32	1 1/2	520	1.65	17.9	18427	17532	17280	17012	16412	15649	14701	12874				
	32	2	572	2.20	21	20269	19469	19249	19019	18523	17955	17253	15944	13237			
	32	3	655	3.30	27	23211	22524	22340	22151	21752	21322	20851	20000	18112	15681		
Z5 Fabricated Steel	30	1	603	1.07	22	15756	14584	14283	13980	13376	12731	11988	10538				
	45		467	1.10	21	18011	16108	15579	15017	13585	11258						
	30	1 1/2	690	1.61	26	18030	17011	16750	16488	15959	15433	14887	13960	11851			
	45		534	1.65	26	20595	18968	18523	18066	17090	15878	14155					
	30	2	760	2.10	31	19859	18936	18702	18465	17988	17508	17030	16283	14805			
	45		588	2.20	29	22678	21218	20826	20422	19585	18674	17564	15158				
	30	3	870	3.20	38	22733	21930	21726	21522	21109	20693	20273	19647	18560	16713	15708	
	45		673	3.30	37	25956	24697	24366	24027	23324	22595	21827	20488	17035			
	40	5	850	5.40	47	30189	29226	28981	28734	28235	27728	27213	26442	25124	22702	21254	
	45		798	5.49	47	30777	29728	29456	29180	28615	28031	27427	26495	24746	21016		

NOTES:
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

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MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 355							Max Motor Frame Size = 145T							
L1 Fabricated Steel	—	1/2	242	0.43	8.3	15175	10328	9140									
			254	0.50	8.9	15927	11362	10187	8843								
			262	0.55	9.4	16429	12099	10845	9713								
	—	3/4	277	0.65	10.4	17370	13491	12089	11056								
			291	0.75	11.1	18247	14699	13347	12206	9911							
			300	0.83	11.7	18812	15447	14191	12951	10960							
	—	1	310	0.91	12.4	19439	16263	15111	13818	11919							
			320	1.00	13.2	20066	17061	15985	14735	12778	10286						
			330	1.10	13.6	20693	17841	16822	15673	13602	11666						
Level 2 Performance			Max RPM L2 = 608							Max Motor Frame Size = 184T							
L2 Fabricated Steel	—	1	310	0.91	12.4	19439	16263	15111	13818	11919							
			320	1.00	13.2	20066	17061	15985	14735	12778	10286						
			330	1.10	13.6	20693	17841	16822	15673	13602	11666						
	—	1 1/2	349	1.30	15.0	21884	19277	18377	17380	15173	13539	11009					
			366	1.50	15.9	22950	20519	19719	18801	16689	14966	13275					
			378	1.65	16.9	23703	21378	20638	19783	17812	15948	14447					
	—	2	391	1.83	18.0	24518	22295	21612	20823	19013	17033	15573	12446				
			403	2.00	19.1	25271	23133	22492	21761	20069	18090	16564	14151				
			416	2.20	20	26086	24033	23429	22753	21160	19293	17628	15529				
	—	3	440	2.60	22	27591	25677	25127	24532	23128	21514	19684	17649				
			461	3.00	24	28907	27099	26587	26043	24790	23316	21632	19372	15790			
			476	3.30	24	29848	28107	27619	27104	25943	24560	23025	20617	17499			
	—	5	514	4.15	28	32231	30639	30202	29745	28758	27606	26290	24052	20870	17462		
			547	5.00	31	34300	32817	32415	31998	31111	30121	28976	27064	23584	20979		
			564	5.50	32	35366	33933	33547	33148	32303	31376	30314	28505	25051	22448	19257	
Level 3 Performance			Max RPM E4 = 1025 E8 = 670 Z5 = 805							Max Motor Frame Size = 215T							
E4 Cast Aluminum	20	1 1/2	685	1.65	31	21038	19437	19031	18625	17818	16972	16030	14428				
	28		575	1.65	26	23707	21895	21390	20849	19649	18411	17145	14637				
	32		535	1.65	25	24271	22194	21625	21033	19753	18280	16539					
	20	2	753	2.19	35	23127	21673	21305	20935	20199	19463	18690	17394	14830			
	28		633	2.20	32	26099	24477	24035	23575	22571	21458	20334	18588	14140			
	32		589	2.20	29	26721	24858	24357	23840	22749	21558	20213	17807				
	20	3	862	3.29	45	26475	25207	24888	24567	23921	23278	22638	21648	19773	17572		
	28		725	3.30	40	29892	28499	28128	27747	26949	26080	25129	23650	21106	17488		
	32		674	3.29	38	30577	28972	28548	28114	27214	26266	25256	23571	20091			
	20	5	1022	5.49	61	31389	30322	30054	29784	29244	28701	28155	27344	25976	24473	22783	
	28		860	5.50	50	35458	34300	33998	33690	33057	32397	31705	30573	28509	26447	24072	
	32		800	5.51	51	36294	34957	34611	34259	33537	32790	32016	30797	28543	25851	22536	
	28	7 1/2	985	8.25	59	40612	39609	39350	39088	38552	38001	37432	36542	34904	33103	31305	27257
	32		916	8.27	60	41556	40397	40099	39798	39185	38556	37911	36909	35140	33194	30975	25350
E8 Cast Aluminum	32	1 1/2	448	1.63	22	22380	20858	20438	19998	19048	17956	16586	13640				
	32	2	494	2.20	25	24678	23317	22949	22568	21760	20878	19885	17993				
	32	3	565	3.29	32	28225	27052	26741	26423	25760	25057	24308	23062	20331			
	32	5	670	5.51	46	33471	32494	32240	31982	31452	30902	30330	29424	27751	25716	23008	
Z5 Fabricated Steel	35	1 1/2	537	1.65	23	23073	21524	21094	20641	19637	18503	17254	14855				
	45		449	1.64	19.1	24894	22377	21725	21063	19592	17779						
	35	2	591	2.17	27	25393	24006	23629	23238	22399	21459	20423	18701				
	45		495	2.20	22	27444	25179	24588	23996	22779	21400	19766					
	35	3	677	3.27	34	29089	27896	27580	27254	26575	25849	25056	23742	21247			
	45		567	3.31	27	31436	29475	28968	28455	27421	26365	25214	23248				
	35	5	802	5.46	44	34460	33467	33208	32945	32403	31839	31251	30308	28529	26535	24205	
	45		671	5.49	35	37202	35557	35136	34711	33849	32975	32101	30737	28117			
	45	7 1/2	769	8.24	45	42636	41206	40843	40476	39736	38986	38224	37081	35101	32840	29917	

NOTES:
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

54 WPB

MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 343							Max Motor Frame Size = 145T							
L1 Fabricated Steel	—	3/4	229	0.65	9.4	20446	14798	13272	11721								
			240	0.75	10.1	21428	16262	14555	13235								
			248	0.83	10.7	22142	17302	15518	14203								
	—	1	256	0.91	11.4	22856	18286	16540	15138	11999							
			264	1.00	11.8	23570	19236	17604	16073	13468							
			273	1.10	12.5	24374	20288	18795	17165	14753							
	—	1½	289	1.30	13.7	25802	22102	20776	19258	16710	13985						
			303	1.50	15.0	27052	23628	22425	21097	18343	16195						
			312	1.65	15.4	27856	24584	23461	22212	19420	17355	14355					
Level 2 Performance			Max RPM L2 = 508							Max Motor Frame Size = 184T							
L2 Fabricated Steel	—	1½	289	1.30	13.7	25802	22102	20776	19258	16710	13985						
			303	1.50	15.0	27052	23628	22425	21097	18343	16195						
			312	1.65	15.4	27856	24584	23461	22212	19420	17355	14355					
	—	2	323	1.83	16.4	28838	25730	24698	23520	20815	18669	16443					
			333	2.00	17.1	29731	26752	25796	24691	22142	19834	17888					
			344	2.20	18.1	30713	27861	26976	25953	23602	21128						
	—	3	364	2.60	20	32499	29849	29062	28173	26094	23650	21636	18824				
			381	3.00	22	34016	31515	30788	29992	28102	25914	23647	21117				
			394	3.30	23	35177	32776	32088	31348	29602	27594	25286	22678				
	—	5	425	4.15	26	37945	35753	35140	34492	33039	31305	29386	26321	22416			
			452	5.00	28	40355	38315	37754	37167	35892	34394	32695	29787	25838	21092		
			467	5.50	30	41695	39730	39193	38634	37433	36052	34461	31787	27592	23857		
Level 3 Performance			Max RPM C3 = 985 C6 = 795 Z5 = 665							Max Motor Frame Size = 254T							
C3 Cast Aluminum	10	1½	660	1.62	19.9	24897	22252	21406	20463	18492	16529	14648	11913				
	20		530	1.64	14.6	26603	22935	21902	20868	18757	15888						
	10	2	725	2.17	24	27349	25008	24318	23541	21815	19992	18214	15646				
	20		582	2.17	16.9	29213	25933	25022	24079	22211	20203	17535					
	10	3	830	3.25	30	31310	29323	28768	28183	26852	25342	23784	21402	17658			
	20		667	3.27	21	33480	30667	29916	29133	27497	25863	24212	21058				
	10	5	985	5.44	38	37157	35524	35085	34631	33672	32614	31412	29489	26128	22950	19821	
	20		791	5.45	27	39704	37367	36756	36134	34842	33480	32086	30035	26073	20366		
	20	7½	908	8.25	34	45577	43559	43037	42508	41427	40308	39138	37326	34338	31021	26557	
	25		854	8.26	37	46257	42923	42224	41562	40393	39334	38284	36519	32920	28580	22600	
	25	10	940	11.02	42	50915	47810	47145	46512	45336	44309	43349	41913	39085	35683	31709	
C6 Cast Aluminum	10	1½	531	1.63	17.4	23717	20785	20290	19808	18723	17310	15962	13879				
	20		436	1.63	13.4	26006	23300	22545	21753	20097	18319	16305					
	25		403	1.63	12.4	26437	22711	21996	21254	19651	17571						
	10	2	585	2.17	20	26129	23321	22832	22383	21500	20457	19163	17344	13369			
	20		480	2.17	15.9	28630	26206	25549	24863	23409	21890	20271	17467				
	25		443	2.17	14.7	29061	25525	24856	24207	22824	21343	19420					
	10	3	669	3.24	25	29881	27282	26778	26332	25538	24770	23927	22321	19649	16345		
	20		550	3.27	19.4	32805	30721	30169	29603	28413	27150	25839	23779	19710			
	25		508	3.27	18.6	33325	30081	29429	28833	27696	26499	25237	23048				
	10	5	794	5.44	34	35464	33138	32665	32219	31415	30724	30075	29091	27041	24642	22560	
	20		652	5.44	25	38889	37154	36703	36244	35301	34318	33287	31665	28835	25678		
	25		602	5.45	24	39492	36626	36012	35428	34378	33411	32450	30896	28062	23554		
	20	7½	749	8.25	33	44675	43176	42790	42399	41603	40785	39943	38620	36278	33832	31198	
	25		691	8.24	30	45330	42757	42190	41646	40619	39696	38840	37590	35355	32947	29620	
	20	10	761	8.65	34	45391	43917	43537	43154	42372	41570	40745	39454	37164	34771	32225	
Z5 Fabricated Steel	30	1½	444	1.61	19.1	25343	23243	22717	22205	21186	20035	18608					
	45		341	1.64	17.6	28632	25310	24419	23447	20507							
	30	2	489	2.16	22	27911	26006	25528	25050	24125	23191	22141	20162				
	45		376	2.20	21	31570	28597	27799	26991	25127	22117						
	30	3	560	3.24	27	31964	30301	29884	29467	28633	27824	27021	25718	22866			
	45		430	3.30	27	36105	33545	32864	32167	30757	29170	26927					
	30	5	663	5.42	36	37843	36439	36087	35736	35031	34327	33627	32610	30849	28684	25812	
	45		510	5.50	34	42822	40693	40138	39573	38411	37234	36013	33842	27629			
	40	7½	622	8.22	42	48183	46661	46266	45865	45042	44190	43306	41917	39360	36186	31966	
	45		584	8.27	43	49035	47191	46715	46233	45249	44236	43209	41641	38496	33296		
	45	10	643	11.04	50	53989	52322	51894	51462	50583	49684	48763	47364	44931	41823	37003	

NOTES:
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Performance Data – Belt Driven

60 WPB

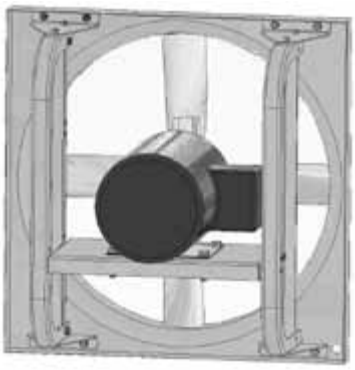
MODEL INFO		MOTOR	FAN	MAX	SONES	CFM / STATIC PRESSURE (IN. W.G.)											
PROPELLER	BLADE ANGLE	HP	RPM	BHP	@ 0" SP	0.000	0.100	0.125	0.150	0.200	0.250	0.300	0.375	0.500	0.625	0.750	1.000
Level 1 Performance			Max RPM L1 = 300							Max Motor Frame Size = 145T							
L1 Fabricated Steel	—	3/4	191	0.65	8.4	23392	15719	13789									
			200	0.75	9.0	24494	17198	15392	12965								
			207	0.83	9.5	25352	18431	16529	14659								
	—	1	214	0.91	10.1	26209	19711	17648	15991								
			220	1.00	10.7	26944	20797	18622	17012								
			228	1.10	11.4	27924	22179	19992	18305	14056							
	—	1 1/2	241	1.30	12.6	29516	24297	22356	20400	17324							
			252	1.50	13.4	30863	26038	24305	22299	19305							
			261	1.65	14.2	31965	27423	25797	23940	20773	17503						
	—	2	269	1.83	15.1	32945	28624	27093	25392	22052	19281						
			278	2.00	15.9	34047	29946	28525	26955	23509	20947	16781					
			287	2.20	16.5	35149	31240	29925	28436	25041	22450	19450					
Level 2 Performance			Max RPM L2 = 399							Max Motor Frame Size = 215T							
L2 Fabricated Steel	—	1 1/2	241	1.30	12.6	29516	24297	22356	20400	17324							
			252	1.50	13.4	30863	26038	24305	22299	19305							
			261	1.65	14.2	31965	27423	25797	23940	20773	17503						
	—	2	269	1.83	15.1	32945	28624	27093	25392	22052	19281						
			278	2.00	15.9	34047	29946	28525	26955	23509	20947	16781					
			287	2.20	16.5	35149	31240	29925	28436	25041	22450	19450					
	—	3	303	2.60	18.2	37109	33486	32336	31006	27941	25015	22679					
			318	3.00	19.4	38946	35547	34517	33334	30614	27496	25176	20996				
			328	3.30	20	40171	36905	35936	34841	32281	29270	26775	23322				
	—	5	354	4.15	23	43355	40385	39534	38616	36452	33963	31110	27900				
			377	5.00	26	46172	43419	42646	41827	39971	37763	35295	31590	26570			
			389	5.50	27	47642	44988	44250	43472	41745	39685	37413	33595	28891			
Level 3 Performance			Max RPM C3 = 955 C6 = 850 Z5 = 685							Max Motor Frame Size = 256T							
C3 Cast Aluminum	10	2	678	2.17	25	30035	27023	26045	24932	22979	21173	18919	16137				
	20		534	2.19	21	32758	28971	27904	26768	24162	21149						
	25		489	2.18	18.4	33067	27434	26035	24491								
	10	3	777	3.27	31	34421	31888	31161	30360	28456	26729	25184	22460	18205			
	20		610	3.27	26	37420	34177	33293	32374	30401	28144	25584	20748				
	25		560	3.27	23	37868	32806	31695	30526	27854							
	10	5	920	5.43	41	40756	38680	38113	37521	36242	34699	33072	31006	27486	23625	19738	
	20		724	5.46	34	44413	41734	41024	40296	38779	37168	35429	32446	26591			
	25		664	5.45	29	44901	40487	39491	38546	36640	34493	32027					
	10	7 1/2	955	6.07	43	42306	40317	39777	39217	38024	36625	35042	32921	29712	25734	22544	
	20		828	8.17	42	50793	48476	47871	47255	45986	44664	43283	41064	36750	31767		
	25		760	8.18	37	51393	47478	46558	45669	44005	42351	40538	37508				
	20	10	912	10.92	50	55946	53855	53313	52764	51639	50477	49275	47388	43921	39844	35318	
	25		839	11.00	43	56735	53157	52308	51475	49886	48394	46897	44428	39446			
C6 Cast Aluminum	10	2	547	2.18	25	28817	26144	25462	24771	23386	22056	20729	18189	12819			
	20		438	2.18	20	32181	28717	27911	27114	25322	22951	20897					
	25		400	2.18	18	32733	29503	28422	27144	24834	22497	19265					
	10	3	626	3.26	31	32978	30651	30061	29468	28263	27051	25865	24153	20515	15979		
	20		501	3.26	26	36809	33761	33017	32303	30908	29379	27404	24500				
	25		458	3.27	23	37479	34775	33984	33103	30928	28893	26977	23300				
	10	5	742	5.42	41	39089	37132	36638	36142	35144	34133	33111	31581	29154	26443	22965	
	20		594	5.44	34	43642	41058	40422	39791	38557	37381	36188	34114	29840	25958		
	25		543	5.45	31	44435	42231	41622	40984	39588	37861	35968	33508	28906			
	10	7 1/2	849	8.16	52	44726	43019	42589	42157	41291	40420	39540	38204	35976	33854	31667	25817
	20		680	8.16	43	49961	47696	47137	46581	45477	44393	43358	41813	38810	34978	31752	
	25		621	8.15	38	50818	48926	48418	47892	46783	45578	44165	41694	38056	34138		
	15	10	833	11.03	63	51930	50146	49704	49263	48386	47515	46649	45388	43319	41106	38587	33676
	20		752	11.04	53	55251	53199	52691	52186	51181	50184	49203	47799	45436	42561	39054	32917
	25		687	11.04	45	56219	54527	54079	53619	52662	51646	50558	48638	44957	41770	38245	
Z5 Fabricated Steel	30	1 1/2	395	1.60	17.9	29048	26492	25773	25004	23326	21516	19156					
	45		302	1.64	15.9	33289	28777	27520	26067								
	30	2	435	2.14	21	31989	29706	29080	28426	27004	25452	23807	20453				
	45		333	2.20	18.8	36706	32664	31581	30440	27683							
	30	3	498	3.22	26	36622	34661	34137	33598	32463	31229	29902	27796	22958			
	45		381	3.29	23	41996	38523	37594	36654	34675	32312	29036					
	30	5	591	5.32	33	43462	41834	41408	40974	40079	39144	38156	36560	33668	30341		
	45		452	5.50	31	49823	46939	46184	45414	43839	42219	40458	37264				
	40	7 1/2	554	8.22	39	56047	53811	53242	52669	51511	50336	49172	47420	44030	39113		
	45		517	8.23	39	56987	54488	53841	53185	51843	50466	49068	46841	42214			
	35	10	673	11.03	47	58165	56751	56385	56015	55257	54476	53669	52403	50097	47506	44629	37471
	40		608	10.86	45	61510	59477	58962	58443	57397	56338	55267	53678	50961	47634	43043	
	45		569	10.46	44	62719	60459	59878	59290	58093	56865	55612	53703	50172	45645		

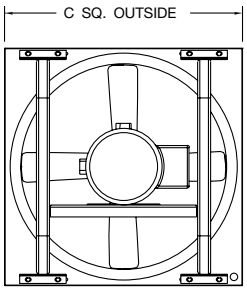
NOTES:

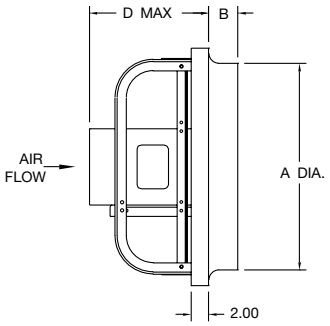
1. Performance certified is for installation type A: Free inlet, free outlet.
2. Power rating (BHP) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: Free inlet hemispherical sone levels.
5. The AMCA Certified Ratings Seal applies to sone ratings only.

Dimensional Data

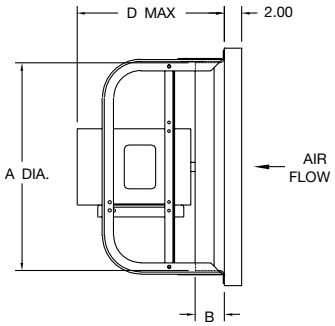
Direct Drive - WPD







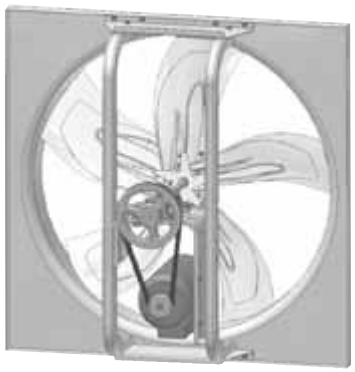
Exhaust Airflow

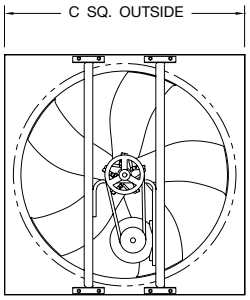


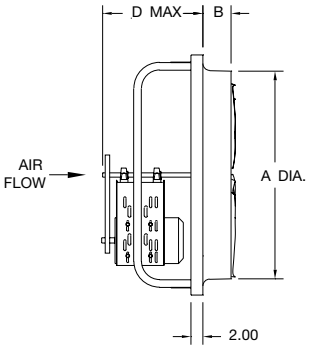
Supply Airflow

SIZE	A	B	C SQ.	D MAX		DAMPER SIZE	MAX MOTOR FRAME
				EXHAUST	SUPPLY		
14	14.25	2.75	17	11.18	14.88	14 x 14	56
16	16.25	3.00	20	11.18	14.88	17 x 17	56
18	18.25	3.00	22	11.18	14.88	19 x 19	56
21	21.25	3.50	25	14.41	17.36	22 x 22	145T
24	24.25	3.50	28	14.55	17.36	25 x 25	184T
30	30.38	4.00	36	14.74	19.05	33 x 33	184T
36	36.38	5.00	42	15.67	19.93	39 x 39	215T
42	42.38	5.50	48	23.59	30.00	45 x 45	254T
48	48.38	6.00	54	23.59	30.00	51 x 51	254T

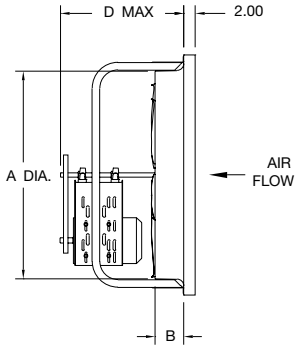
Belt Driven - WPB, Levels 1 & 2







Exhaust Airflow

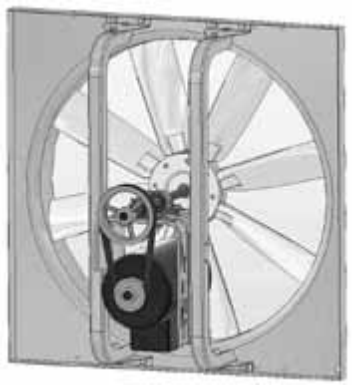


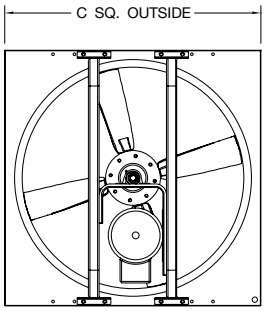
Supply Airflow

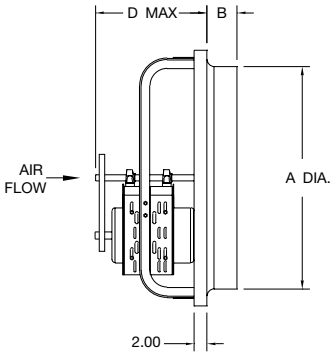
SIZE	A	B	C SQ.	D MAX				DAMPER SIZE	MAX MOTOR FRAME	
				EXHAUST		SUPPLY			L1	L2
				L1	L2	L1	L2			
21	21.25	3.50	25	15.88	15.88	18.44	18.44	22 x 22	56	145T
24	24.25	3.50	28	16.19	16.19	19.19	19.19	25 x 25	56	145T
30	30.38	4.00	36	17.81	19.31	20.50	22.00	33 x 33	145T	184T
36	36.38	5.00	42	17.50	19.13	21.50	23.13	39 x 39	145T	184T
42	42.38	5.50	48	17.88	19.38	22.19	23.75	45 x 45	145T	184T
48	48.38	6.00	54	18.75	20.13	23.06	24.63	51 x 51	145T	184T
54	54.38	6.50	60	18.88	20.50	23.69	25.19	57 x 57	145T	184T
60	60.38	7.25	66	19.50	24.75	24.44	29.94	63 x 63	145T	215T

Dimensional Data

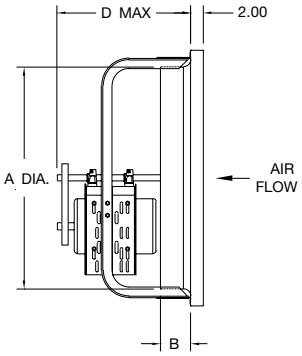
Belt Driven - WPB, Level 3, Sizes 21-36







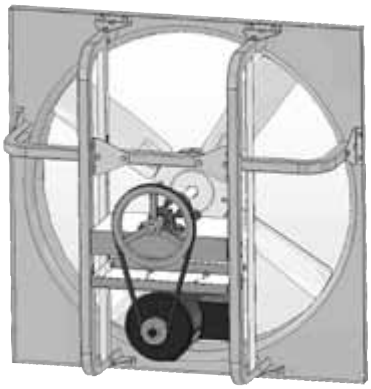
Exhaust Airflow

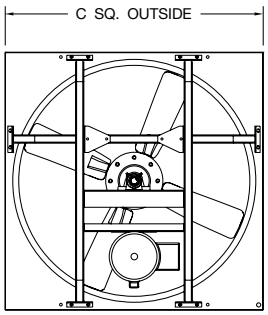


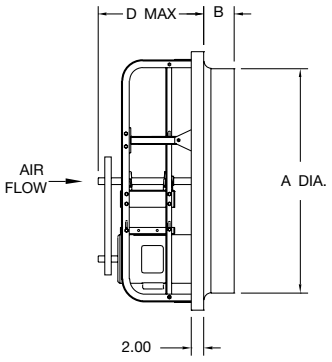
Supply Airflow

SIZE	A	B	C SQ.	D MAX		DAMPER SIZE	MAX MOTOR FRAME
				EXHAUST	SUPPLY		
21	21.25	3.50	25	17.25	20.50	22 x 22	145T
24	24.25	3.50	28	17.25	20.50	25 x 25	145T
30	30.38	4.00	36	18.31	20.93	33 x 33	184T
36	36.38	5.00	42	18.31	21.93	39 x 39	184T

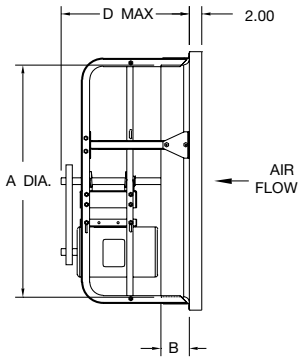
Belt Driven - WPB, Level 3, Sizes 42-60







Exhaust Airflow

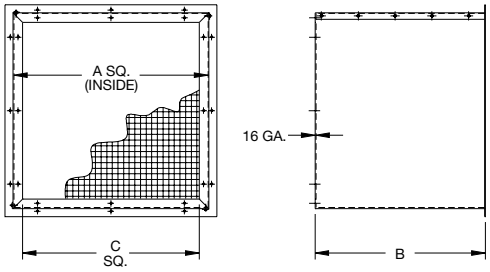


Supply Airflow

SIZE	A	B	C SQ.	D MAX		DAMPER SIZE	MAX MOTOR FRAME
				EXHAUST	SUPPLY		
42	42.38	5.50	48	21.31	26.75	45 x 45	215T
48	48.38	6.00	54	21.31	26.75	51 x 51	215T
54	54.38	6.50	60	26.13	32.30	57 x 57	254T
60	60.38	7.25	66	26.13	32.30	63 x 63	256T

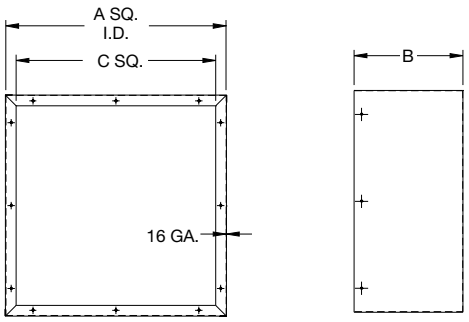
Dimensional Data – Accessories

Wall Box with Removable Screen



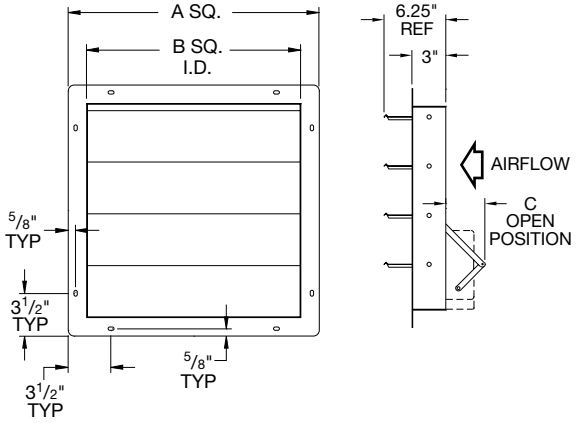
SIZE	A SQ.	B	C SQ.	MINIMUM WALL OPENING
14	17.25	33.50	14.63	18
16	20.25	34.00	17.63	21
18	22.25	34.00	19.63	23
21	25.25	36.00	22.63	26
24	28.25	37.00	25.63	29
30	36.25	40.00	33.63	37
36	42.25	40.00	39.63	43
42	48.25	43.00	45.63	49
48	54.25	43.00	51.63	55
54	60.25	49.00	57.63	61
60	66.25	50.00	63.63	67

Wall Collar



SIZE	A SQ.	B	C SQ.	MINIMUM WALL OPENING
14	17.25	20.00	14.63	18
16	20.25	20.00	17.63	21
18	22.25	20.00	19.63	23
21	25.25	21.00	22.63	26
24	28.25	22.00	25.63	29
30	36.25	23.00	33.63	37
36	42.25	23.00	39.63	43
42	48.25	24.00	45.63	49
48	54.25	25.00	51.63	55
54	60.25	26.00	57.63	61
60	66.25	26.00	63.63	67

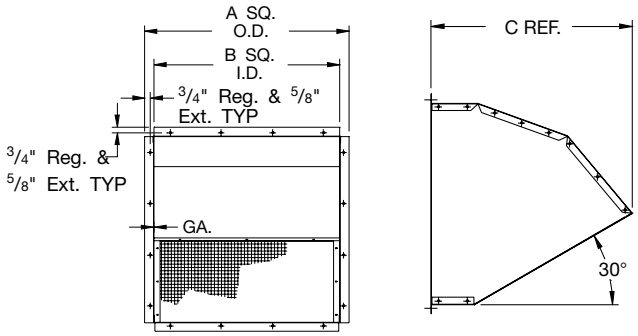
Backdraft Damper



SIZE	A SQ. FLANGE	B SQ.	C	NO. OF PANELS
14	17.00	14	3.50	1
16	20.00	17	3.50	1
18	22.00	19	3.50	1
21	25.00	22	3.50	1
24	28.00	25	3.50	1
30	36.00	33	3.50	1
36	42.00	39	5.50	2
42	48.00	45	5.50	2
48	54.00	51	5.00	2
54	60.00	57	5.00	2
60	66.00	63	5.00	2

Exhaust Damper shown (with front flange).
Supply damper has rear flange.

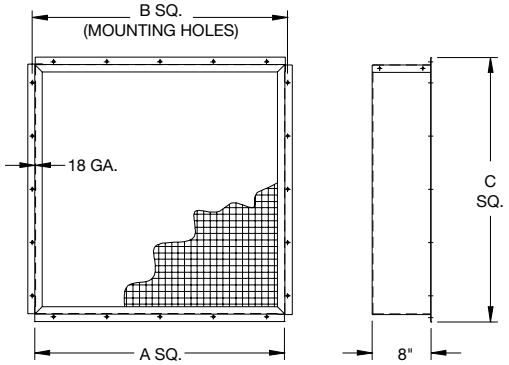
Weatherhood with Bird Screen



SIZE	A SQ.		B SQ.		C	GA.
	REG.	EXT.	REG.	EXT.		
14	17.25	21.25	14.63	14.75	15.06	18
16	20.25	24.25	17.63	17.75	17.13	18
18	22.25	26.25	19.63	19.75	19.50	18
21	25.25	29.25	22.63	22.75	22.09	18
24	28.25	32.25	25.63	25.75	25.13	18
30	36.25	40.25	33.63	33.75	33.25	16
36	42.25	46.25	39.63	39.75	39.25	16
42	48.25	52.25	45.63	45.75	45.25	16
48	54.25	58.25	51.63	51.75	51.25	16
54	60.25	64.25	57.63	57.75	56.00	16
60	66.25	70.25	63.63	63.75	61.25	16

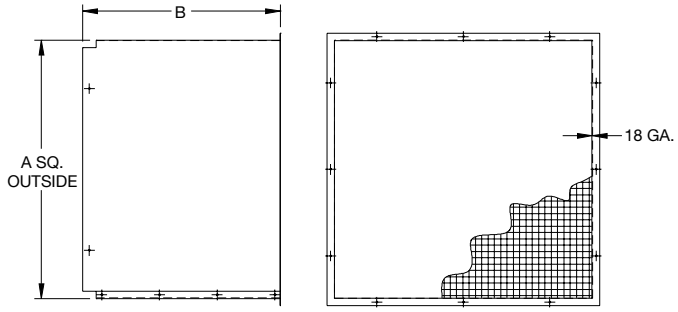
Dimensional Data – Accessories

Damper Guard



SIZE	A SQ.	B SQ.	C SQ.
14	15	15.75	17
16	18	18.75	20
18	20	20.75	22
21	23	23.75	25
24	26	26.75	28
30	34	34.75	36
36	40	40.75	42
42	46	46.75	48
48	52	52.75	54
54	58	58.75	60
60	64	64.75	66

OSHA Motor Side Guard



SIZE	A SQ.	B
14	16.88	15.25
16	19.88	15.50
18	21.88	15.50
21	24.88	20.50
24	27.88	23.50
30	35.19	23.50
36	41.19	25.50
42	47.19	29.50
48	53.19	30.25
54	59.19	27.75
60	65.19	32.00

Engineering Data

Approx. Shipping Weight (LB.)

FAN SIZE	WPD			WPB						
	E4	E8	Z5	L1	L2	E4	E8	C3	C6	Z5
14	41	45	—	—	—	—	—	—	—	—
16	47	49	—	—	—	—	—	—	—	—
18	50	52	—	—	—	—	—	—	—	—
21	58	69	—	61	69	72	75	—	—	—
24	74	77	78	69	74	80	86	—	—	90
30	99	105	111	90	100	103	118	—	—	124
36	127	154	175	115	127	139	146	—	—	161
42	195	210	229	147	167	197	212	—	—	267
48	208	224	247	160	248	273	289	—	—	324
54	—	—	—	184	276	—	—	345	369	440
60	—	—	—	261	368	—	—	423	438	470

Material Specification

FAN SIZE	GAUGE OF MATERIAL												SHAFT SIZE (IN.)		
	FAN PANEL			DRIVE FRAME			PROPELLERS				HUBS		WPB		
	WPD	WPB		WPD	WPB		L1/L2	E	C	Z	L1/L2	Z	L1	L2	E/C/Z
		L1/L2	E/C/Z		L1/L2	E/C/Z									
14	18	—	—	14	—	—	—		—	—	—	—	—	—	—
16	18	—	—	14	—	—	—		—	—	—	—	—	—	—
18	18	—	—	14	—	—	—		—	—	—	—	—	—	—
21	18	18	18	14	14	14	16	DIE	—	—	14	—	3/4	3/4	1
24	16	18	16	12	14	14	16	CAST	—	14	14	12	3/4	3/4	1
30	16	18	16	12	12	12	16	ALUM.	—	14	14	12	3/4	1	1
36	16	18	16	12	12	12	16		—	12	14	12	3/4	1	1
42	14	16	14	10	12	12	14		—	10	12	10	1	1 3/16	1 3/16
48	14	16	14	10	12	12	14		—	10	12	10	1	1 3/16	1 7/16
54	—	16	14	—	12	10	14	—	CAST	10	12	7	1	1 3/16	1 7/16
60	—	14	14	—	12	10	12	—	ALUM.	10	3/16	7	1 3/16	1 1/2	1 11/16

Typical Specifications – WPD / WPB

Wall propeller fans shall be Type WPD direct drive or WPB belt driven as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE - Fans shall be tested in accordance with AMCA 210 and AMCA 300 test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air.

CONSTRUCTION - Fan panels and motor mount assemblies shall be constructed of heavy gauge steel for durability and appearance. Panels shall have a deep formed inlet venturi and pre-punched holes for easy mounting.

PROPELLERS - Propellers shall be constructed of fabricated steel or cast aluminum blades and hubs. Propellers on direct drive units shall be mounted directly on the motor shaft with a taperlock bushing. Propellers on belt driven units shall be welded to the fan shaft or secured with a taperlock bushing.

SHAFTS (WPB Only) - Shafts shall be AISI 1045 cold rolled steel, accurately turned, ground, polished, and ring gauged for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed.

BEARINGS (WPB Only) - Bearings are to be pillow block, heavy-duty, anti-friction, self-aligning, grease lubricated, ball type. Each fan's bearings are sized with a minimum average life, per AFBMA, in excess of 200,000 hours when operating at the maximum RPM of the class.

DRIVES (WPB Only) - Motor sheaves shall be cast iron, and supplied as variable pitch standard. Drives and belts shall be rated for a minimum of 150% of the required motor HP.

MOTORS - All motors shall be split phase and capacitor start single phase or three phase induction, permanently lubricated, heavy-duty, ball bearing type, closely matched to the fan load and provided at the voltage, phase, hertz, and enclosure as provided on the fan schedule.

FINISH AND COATING - Fans shall have galvanized steel or painted steel orifice panels and motor supports.

ACCESSORIES - When specified, accessories such as wall boxes, wall collars, OSHA motor side guards, weatherhoods, backdraft dampers, damper guards, and disconnect switches shall be provided by Twin City Fan to maintain one source responsibility.

FACTORY RUN TEST - All fans prior to shipment shall be completely assembled and test run as a unit at operating speed or maximum RPM allowed for the particular construction type. Each propeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 "Balance Quality and Vibration Levels for Fans" to Fan Application Category BV-3, Balance Quality Grade G6.3. Balance readings shall be taken by electronic type equipment in the axial, vertical, and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.

GUARANTEE - The manufacturer shall guarantee the workmanship and materials for its WPD and WPB wall propeller fans for at least one (1) year from startup or eighteen (18) months from shipment, whichever occurs first.

INDUSTRIAL & COMMERCIAL FANS

Centrifugal Fans | Utility Sets | Plenum & Plug Fans | Inline Centrifugal Fans
Mixed Flow Fans | Tubeaxial & Vaneaxial Fans | Propeller Wall Fans | Propeller Roof Ventilators
Centrifugal Roof & Wall Exhausters | Ceiling Ventilators | Gravity Ventilators | Duct Blowers
Radial Bladed Fans | Radial Tip Fans | High Efficiency Industrial Fans | Pressure Blowers
Laboratory Exhaust Fans | Filtered Supply Fans | Mancoolers | Fiberglass Fans | Custom Fans

Fans & Blowers
Twin City

A Twin City Fan Company

TWIN CITY FAN & BLOWER | WWW.TCF.COM
5959 Trenton Lane N | Minneapolis, MN 55442 | Phone: 763-551-7600 | Fax: 763-551-7601

1.5MWG07/11

TURBOCELL

EVAPORATIVE COOLING

Catalog HECD-5

ALTON®

Quality Engineered Products Since 1946

TURBOCELL

EVAPORATIVE COOLING

THE LATEST IN COOLING TECHNOLOGY

In many types of industries where efficient, low-cost cooling is essential, "Alton" has been the word for experience, reliability and innovation since 1946. Alton offers its service oriented expertise and reliability to ensure the high quality standards that architects, engineers, building owners, and plant managers have come to rely on from one of the industry leaders.

ALTON has the facilities, resources and people to assure Leadership and Quality in research and development, design and engineering, manufacturing and service.

To all this, add the professional planning assistance provided by ALTON. We work with architects, engineers, building owners and plant managers to help select the right equipment, analyze the best way to install it and back it with service.

BENEFITS OF EVAPORATIVE COOLING

Cooling without the cost of refrigeration . . . Cooling nature's way with water eliminates the cost of expensive refrigeration systems and reduces operating and maintenance costs. Installation is simple and inexpensive.

Big Space or Small.
You can cool a small area or a big plant. With capacities from 5,000 to 64,000 CFM you have the flexibility to put cool air right where you want it. Air changes can be planned for one every 30 seconds to one every five minutes (12 to 120 times an hour) – depending on climate conditions and operational requirements.

Comfort Anywhere.
On a humid day in New Orleans the Turbocell can reduce the 93°F air to a relatively cool 70°-80°F. In drier Tucson, 104° outside air can be brought down 30°F. The hotter and drier the air, the greater the reduction in temperature. That means maximum comfort when you need it most.

Ventilation.
Fresh air ventilation is available anytime by just turning off the water spray system. The Turbocell blower continues to operate pumping in plenty of fresh outside air.

HOW THE TURBOCELL EVAPORATIVE COOLER WORKS

Whenever water is evaporated, heat is absorbed. Wet the back of your hand, then blow on it. The skin surface is immediately cooler. This demonstrates the basic principle of evaporative cooling. The Turbocell works by drawing outside air through a uniquely designed cross-fluted media. Due to its internal geometry, a turbulent mix of air and water is created which optimizes heat transfer. An air washing effect is also created which removes most dust and dirt from the air stream before the air flows into the work area providing a clean, cool environment.

WHY EVAPORATIVE COOLING IS COMFORTABLE

Lowers Temperature.
The Turbocell pumps in cool air lowering room temperature.

Lowers the Temperature You Feel.
The rapid moving air produced by the Turbocell increases skin surface evaporation. This results in effective cooling meaning people feel 3 to 5 degrees cooler than the temperature read from a thermometer.

Carries Away Radiated Heat.
A constant flow of cool air removes heat from the work place leaving a more comfortable surrounding.

Fresh Air.
The Turbocell provides fresh, revitalizing air, forcing stale air out.

Cleans Air.
The Turbocell system cleans air by removing dust, dirt, pollen, and foreign matter creating a more refreshing environment.

COVER: HECD-340 with optional stainless steel blower section and pre-wired package.

ALTON

TURBOCELL FEATURES

Ⓐ ***Cooling Media.***

The Turbodek media with its unique cross-fluted design not only offers a higher cooling efficiency, up to 90% in the 400 fpm range (slightly higher with Fiberdek), but is more durable and its self cleaning action extends the life span years beyond that of most conventional media. Optional Fiberdek is U.L. approved with a U.L.900, class 2 rating.

Ⓑ ***Optional Maxaire Prefilter.***

Keeps bugs out, reduces odor-producing algae by keeping out sunlight and helps minimize the accumulation of dust, dirt and other airborne particles from rapidly collecting in the water tank.

Ⓒ ***Washer Cabinet and Water Pan.***

Construction of 304 Stainless Steel.

Ⓓ ***Float Operated Valve.***

Maintains water level in tank, $^{3}/_{8}$", parts are corrosion-resistant and replaceable.

Ⓔ ***Bleed-off Valve.***

Manually adjustable, brass construction, $^{1}/_{4}$", reduces mineral buildup, helps prevent media clogging thus extending media life.

Ⓕ ***Water Distribution Manifold.***

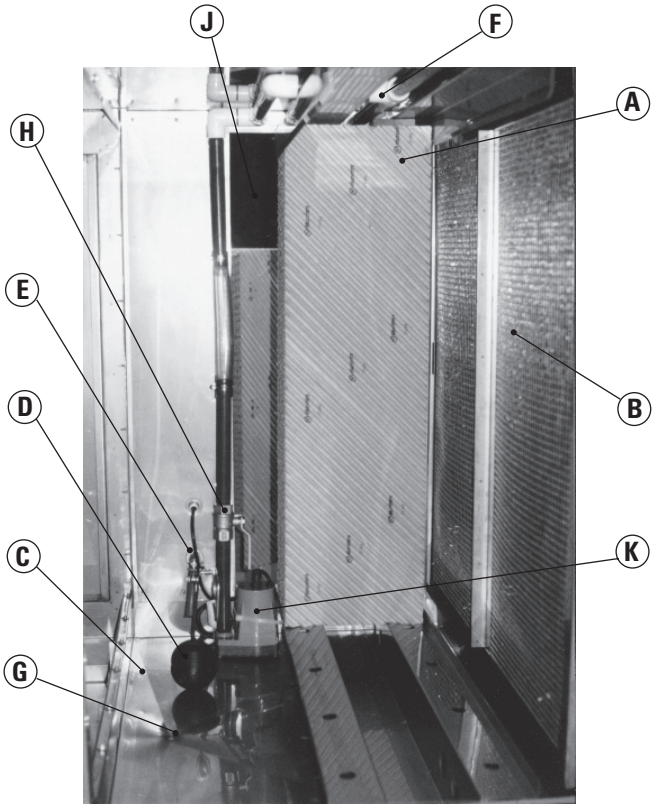
Heavy-duty schedule 40 PVC with metered orifices, and removable end caps for easy cleaning.

Ⓖ ***Bottom Drain.***

Drain pan is cross broke to center with stainless steel nipple welded in place, allows for complete drainage of water pan.

Ⓗ ***Water Regulator Valve.***

Brass construction, water flow can be field set.



Ⓙ ***Access Panel.***

Full size side panel provides easy access to pump, float valve, water regulator valve and cooling media that can be easily removed.

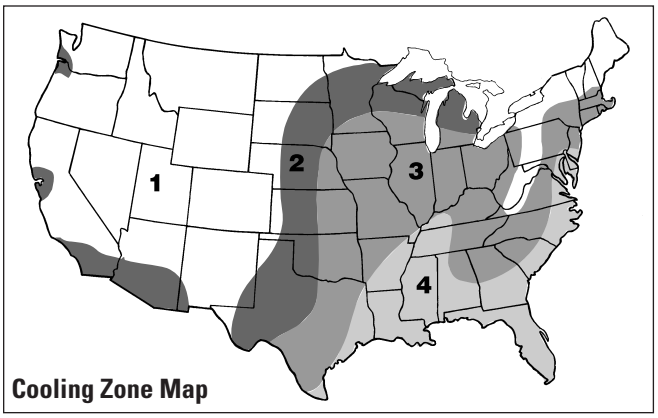
Ⓚ ***Pump.***

Submersible, centrifugal, U.L. listed, dielectric oil-filled motor, lubricated for life. Lightweight and compact with strainer to prevent clogging. Available for 115V or 230V, single-phase operation.

EQUIPMENT OPTIONS

- The Turbocell cooling compartment may be purchased separately as our WCD series. On hot days it can turn an ordinary ventilating or make-up air system into a cooling system.
- Air distributors – 4 direction flow, available with manual damper.
- Air grilles – industrial duty, high velocity.
- Additional access door.
- Winter back cover.
- Motorized discharge damper (2 position or modulating).
- Maxaire prefilter.
- Fiberdek
- Duradek coating
- Stainless steel blower compartment.
- Factory wired starters/disconnects.
- Remote control panels.
- 2 speed, TEFC or high efficiency motors.
- OA/RA mixing plenum.
- Fill and drain kit.
- Spring isolated blower assembly.
- One foot cabinet section for coil mounting.

SELECTING A TURBOCELL



Cooling Zone Map

The Turbocell can be used to area cool or spot cool. Area cooling is used to cool an entire work area where workers constantly move about and cooling requirements do not vary greatly from one location to the next. Spot cooling is used when building volume is large and workers are located near machines that give off heat. Cool air from the Turbocell is distributed through ductwork and discharged directly on the workers.

AIR CHANGE TABLE

Interior Heat Load	Sun Protection	Minutes Per Air Change			
		Zone 1	Zone 2	Zone 3	Zone 4
Excessive	Poor	1 1/2	1	3/4	1/2
	Good	2	1 1/2	1	3/4
Normal	Poor	2	1 1/2	1	3/4
	Good	2	2	1 1/2	1

AREA COOLING:

Step 1. Select the zone from the "Cooling Zone Map."

Step 2. Decide if the interior heat load is "Normal" or "Excessive." "Normal" means no heat producing equipment or large crowds. "Excessive" means an area with heat generating equipment or a large number of people. Examples of heat generating equipment are large motors, stoves, ovens, or industrial process equipment.

Step 3. Decide if the area to be cooled is protected from the heat of the sun. A "Good" sun protection is one where the building is insulated or the exterior walls are shaded. Windows do not face the sun during the heat of the day. A "Poor" sun protection is one where the building is uninsulated, sun beams down on the building and windows face the sun during the afternoon hours.

Step 4. Refer to the "Air Change Table" and determine the number of minutes required per air change.

Step 5. Calculate the building size. (Length in ft.) x (Width in ft.) x (Height in ft.) = ft^3. **Note:** If the building has a very high ceiling, use a height of 15 to 18 feet. The Turbocell should be installed so it discharges into the lower part of the room while an exhaust fan draws air from the upper level.

Step 6. Reduce the building size by the room taken up with machinery, inventory, etc. (Building size in ft^3) – (Machinery, etc. in ft^3) = (Space to cool in ft^3).

Step 7. Divide the (Space to cool in ft^3) from step 6 by the (Number of minutes required per air change) from step 4. This gives the CFM rating of the Turbocell Unit.

Step 8. Refer to the "Air Delivery Table" to select the Turbocell Model No. If the required CFM rating falls between models select the larger of the two.

EXAMPLE:

Step 1. Small radiator factory located in Mobile, AL. See "Cooling Zone Map" to get Zone 4.

Step 2. Factory has solder dip tanks that give off heat. Interior heat load is "Excessive."

Step 3. Factory is exposed to sun throughout the day. Sun protection is "Poor."

Step 4. From "Air Change Table" get 1/2 minute per air change.

Step 5. Calculate the size of the factory. (50 ft. length) x (30 ft. width) x (10 ft. height) = 15,000 ft^3.

Step 6. Room occupied by machinery and inventory is 2,200 ft^3. (15,000 ft3) - (2,200 ft^3) = 12,800 ft^3.

Step 7. CFM rating = $\frac{12{,}800\ ft^3}{1/2\ \text{min.}}$ = 25,600 CFM

Step 8. From the "Air Delivery Table" select Model HECD-260.

SPOT COOLING:

The volume of air per work station depends on the amount of activity, the degree of heat to overcome, and the distance between workers and air discharge. The volume of air usually varies from 500 to 5,000 CFM and the air velocity at the worker should range from 400-1000 FPM. The cool air discharge should be no more than 4-10 feet from the worker and be directed towards the upper body area. The air outlet should be adjustable so the direction of flow can be controlled. Due to the complexity of sizing units for specific spot cooling applications please contact the Alton Sales Department for assistance.

TURBOCELL SERIES AIR DELIVERY TABLE

MODEL NO.	CFM	BLOWER HORSEPOWER AND SPEED REQD. @ ESP (W.C.)													
		0.125"		0.25"		0.50"		0.75"		1.00"		1.25"		1.50"	
		HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM
HECD-70	5000	1	387	1	432	1.5	512	2	588	2	667	2	716	3	768
WCD-70	6000	1.5	451	1.5	486	2	553	3	625	3	692	3	745	5	798
FFA-13.3 sq. ft.	7000	2	518	3	544	3	605	3	666	5	725	5	777	5	829
18" FC	8000	3	585	3	607	5	656	5	712	5	766	5	815	7.5	863
	9000	5	652	5	670	5	713	5	763	7.5	812	7.5	859	7.5	902
HECD-100	8000	3	462	3	490	3	545	5	593	5	642	5	688	5	740
WCD-100	9000	5	514	5	539	5	588	5	635	5	675	7.5	715	7.5	760
FFA-17.2 sq. ft.	10,000	5	565	5	587	5	632	7.5	677	7.5	715	7.5	752	7.5	789
20" FC	11,000	7.5	617	7.5	640	7.5	680	7.5	720	7.5	756	10	791	10	826
	12,000	7.5	670	7.5	691	10	727	10	763	10	800	10	835	10	866
HECD-130	11,000	2	305	3	333	3	385	5	433	5	477	5	518	7.5	560
WCD-130	12,000	3	329	3	354	5	402	5	447	5	490	7.5	530	7.5	566
FFA-20.0 sq. ft.	13,000	3	352	5	375	5	419	5	463	7.5	505	7.5	542	7.5	577
25" FC	14,000	5	375	5	396	5	439	7.5	481	7.5	520	7.5	555	10	590
HECD-210	15,000	3	290	5	314	5	360	7.5	400	7.5	440	7.5	475	10	511
WCD-210	16,000	5	304	5	330	5	373	7.5	411	7.5	448	10	484	10	518
FFA-32.9 sq. ft.	17,000	5	320	5	343	7.5	385	7.5	422	10	460	10	493	10	524
27" FC	18,000	5	337	7.5	359	7.5	399	7.5	436	10	470	10	503	15	534
	19,000	7.5	355	7.5	373	7.5	412	10	450	10	481	15	512	15	544
	20,000	7.5	370	7.5	391	7.5	428	10	462	15	493	15	523	15	556
	21,000	7.5	385	10	405	10	441	15	475	15	505	15	535	15	566
	22,000	10	402	10	420	15	456	15	490	15	515	15	546	20	576
	23,000	10	420	15	435	15	469	15	502	15	532	20	560	20	589
HECD-260	21,000	7.5	325	7.5	343	10	375	10	409	15	441	15	468	15	495
(2) WCD-130	22,000	7.5	337	7.5	354	10	389	15	420	15	450	15	478	15	504
FFA-40.0 sq. ft.	23,000	10	350	10	369	15	400	15	431	15	460	15	487	15	513
27" FC	24,000	10	365	10	382	15	412	15	442	15	471	15	497	20	522
	25,000	10	375	15	395	15	424	15	455	15	481	20	507	20	532
	26,000	15	391	15	407	15	437	15	465	20	492	20	516	20	542
	27,000	15	403	15	421	15	449	20	476	20	503	20	528	25	551
	28,000	15	420	15	434	20	464	20	488	20	513	25	538	25	563
HECD-300	23,000	5	230	5	246	7.5	285	7.5	319	10	349	10	377	15	402
WCD-300	24,000	7.5	239	7.5	252	7.5	291	10	325	10	354	15	382	15	406
FFA-49.5 sq. ft.	25,000	7.5	248	7.5	260	7.5	297	10	330	10	360	15	387	15	411
33" FC	26,000	7.5	258	7.5	267	10	303	10	335	15	365	15	393	15	416
	27,000	7.5	267	7.5	276	10	311	15	341	15	371	15	397	15	422
	28,000	10	276	10	284	10	318	15	347	15	376	15	402	20	427
	29,000	10	285	10	292	15	324	15	354	15	382	15	408	20	432
	30,000	10	295	10	303	15	331	15	360	15	388	20	414	20	436
	31,000	15	305	15	311	15	340	15	367	20	394	20	419	20	443
	32,000	15	313	15	320	15	346	15	373	20	400	20	424	20	449
HECD-340	28,000	10	262	10	267	10	283	15	310	15	339	15	364	15	388
(2) WCD-210	29,000	10	270	10	276	10	290	15	315	15	343	15	368	20	392
FFA-65.8 sq. ft.	30,000	10	279	10	285	15	297	15	319	15	348	15	373	20	395
33" FC	31,000	15	288	15	293	15	305	15	325	15	353	20	377	20	400
	32,000	15	297	15	301	15	314	15	331	20	357	20	382	20	404
	33,000	15	307	15	311	15	322	15	337	20	361	20	387	20	408
	34,000	15	315	15	320	15	330	20	344	20	366	20	392	25	413
	35,000	15	325	20	329	20	338	20	351	20	370	25	396	25	417
	36,000	20	333	20	338	20	347	20	359	20	376	25	400	25	423
	37,000	20	342	20	347	20	355	20	365	25	382	25	404	25	428
	38,000	20	352	20	355	25	364	25	374	25	388	25	408	30	433
HECD-420	36,000	15	259	15	274	15	299	20	325	20	350	25	370	25	390
(2) WCD-210	37,000	15	266	15	280	20	306	20	331	20	354	25	375	25	394
FFA-66.8 sq. ft.	38,000	15	273	20	287	20	311	20	336	25	359	25	380	25	398
36" FC	39,000	20	280	20	293	20	317	25	341	25	364	25	384	30	402
	40,000	20	287	20	298	20	322	25	345	25	368	30	389	30	407
	41,000	20	293	20	305	25	328	25	350	25	373	30	393	30	412
	42,000	20	299	20	312	25	334	25	356	30	377	30	398	40	417
	43,000	20	305	25	318	25	340	30	361	30	383	30	404	40	422
	44,000	25	311	25	324	25	346	30	366	30	388	40	408	40	427
	45,000	25	318	25	330	30	351	30	371	40	393	40	414	40	432
	46,000	25	324	30	337	30	358	30	377	40	398	40	418	40	436
HECD-600	46,000	20	247	20	258	20	282	25	304	25	325	30	344	40	362
(2) WCD-300	48,000	20	258	20	267	25	290	25	313	30	332	40	351	40	368
FFA-99.0 sq. ft.	50,000	20	267	25	277	25	298	30	320	30	340	40	358	40	375
42" FC	52,000	25	277	25	287	30	307	30	328	40	347	40	366	40	382
	54,000	25	286	30	296	30	315	40	336	40	355	40	373	50	390
	56,000	30	296	30	306	40	324	40	344	40	362	50	380	50	396
	58,000	30	306	40	315	40	333	40	352	50	371	50	387	50	404
	60,000	40	316	40	325	40	342	50	360	50	378	50	395	60	411
	62,000	40	327	40	335	50	351	50	368	50	386	60	404	60	419
	64,000	50	337	50	345	50	359	50	377	60	394	60	411	60	426

EXAMPLE OF HOW TO USE AIR DELIVERY TABLE:

To select a blower that will provide 20,000 CFM with external static pressure of 0.50" at sea level and determine the RPM and horsepower required, begin by finding 20,000 in CFM column. Model HECD-210 meets this requirement. Then follow the line for 20,000 CFM horizontally to the column for 0.50" static pressure. (Make adjustments for the accessories listed below, if applicable.) This shows that the operating speed is 428 RPM and the horsepower is 7-1/2. Allowances for drive loss have already been factored into the table.

Static pressure drops for optional equipment accessories must be added to the external static pressures to determine the appropriate blower motor horsepower.

- Maxaire prefilter 0.30" WG
- Discharge damper 0.50" WG
- OA/RA mixing plenum 0.15" WG

Performance shown is for installation type B, Free inlet, Ducted outlet.

Performance ratings include the effects of evaporative media, bearings and blower sheaves in the airstream.

During certification testing, drive losses were not included as part of brake horsepower measurements. However, the selection table to the left reflects horsepower requirements based on stated air delivery and external static air pressure.

NOTE: Combination of some optional equipment may effect standard cabinet dimension. Please contact factory for more information.

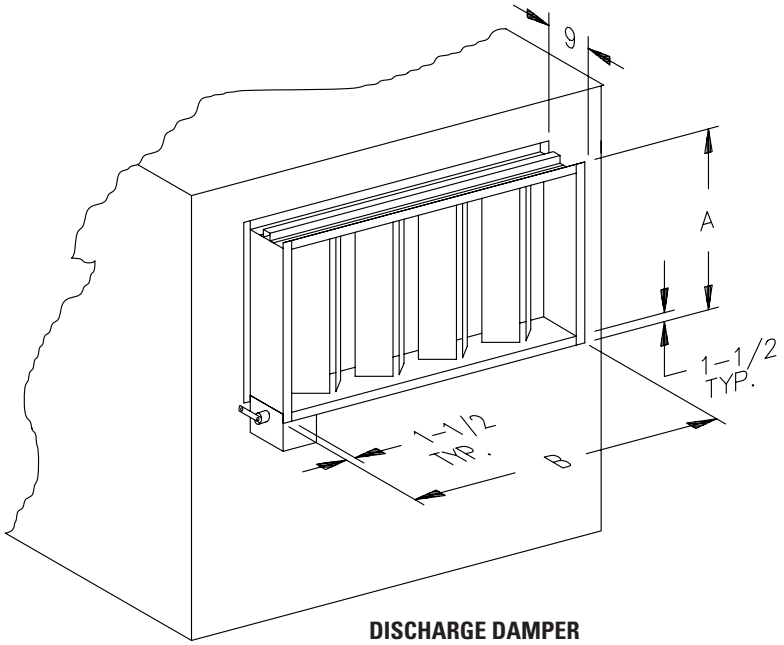
ALTON MOTORIZED VOLUME CONTROL DAMPERS

The Alton HECD Turbocell Series offers an optional motorized discharge damper which can be ordered with either a two-position or modulating actuator. This discharge damper is a simple, yet versatile option which will greatly enhance the flexibility of the Turbocell unit. The damper system attaches to the discharge of the blower and can be used as a shut-off damper or a variable air volume damper.

When equipped with a two-position actuator, this damper system proves to be very effective at reducing air migration. The two-position actuator is designed to open the damper as the blower motor is energized, allowing maximum air flow as long as the blower motor is running. A spring return closes the damper on loss of power to prevent air migration in either direction.

When equipped with a modulating actuator, this damper system offers the benefits of a multi-speed unit without the expensive electrical controls a two-speed system requires. Controlled by a potentiometer which is remotely located inside the building, the damper can be adjusted from fully open, to partially opened, to fully closed when the blower is de-energized. During milder spring and fall days when full air capacity may not be required, the damper can be adjusted until the desired amount of air flow is established. As the damper is closed, the resistance on the blower results in a free wheeling action which, tests have proven, actually reduces the power consumption of the blower motor. The modulating damper system offers far greater flexibility than the typical high-low operation of a two-speed motor, while also providing greater savings for you.

Field results have proven that the motorized discharge damper option can be a valuable addition to your Alton HECD Turbocell unit.

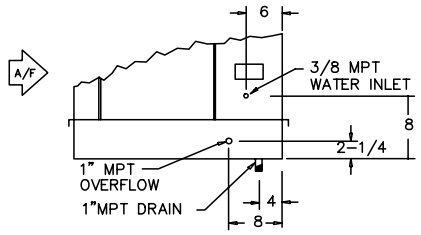


DISCHARGE DAMPER

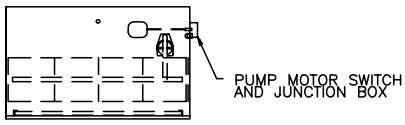
DIMENSIONS	MODEL								
	HECD-70	HECD-100	HECD-130	HECD-210	HECD-260	HECD-300	HECD-340	HECD-420	HECD-600
A	22-7/8	28-3/4	38-1/4	38-1/4	38-1/4	47	47	47	48
B	26-15/16	29-3/4	39-1/4	39-1/4	39-1/4	43-3/8	43-3/8	53	65-1/8

DIMENSIONS – BASIC UNIT

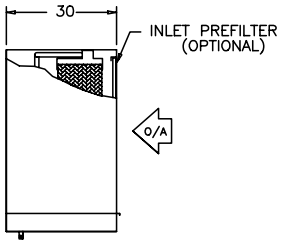
WCD-70, 100, 130, 210, 300



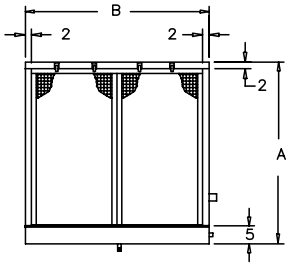
DETAIL "A"



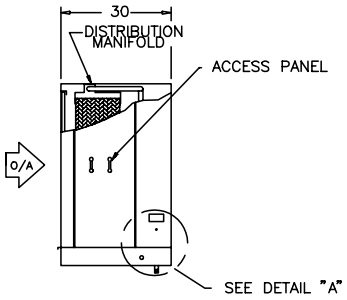
PLAN VIEW



LEFT SIDE VIEW



REAR VIEW

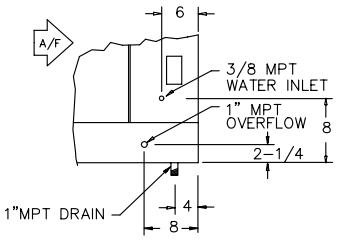


RIGHT SIDE VIEW

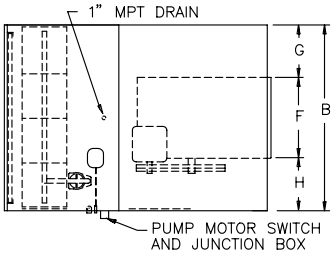
MODEL	EVAP. MEDIA	A	B	NET WT.	OPERATING WT.
WCD-70	(4) 12 x 12 x 42-1/2 (1) 2 x 12 x 42-1/2	50	50	155 lbs.	415 lbs.
WCD-100	(4) 12 x 12 x 48 (1) 8 x 12 x 48	56	56	205 lbs.	469 lbs.
WCD-130	(5) 12 x 12 x 54-1/2	62	60	224 lbs.	515 lbs.
WCD-210	(6) 12 x 12 x 67-1/2 (1) 3 x 12 x 67-1/2	75	75	344 lbs.	734 lbs.
WCD-300	(8) 12 x 12 x 78-1/2	86	96	430 lbs.	955 lbs.

DIMENSIONS – BASIC UNIT

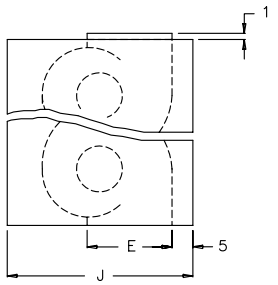
HECD-70, 100, 130, 210, 300



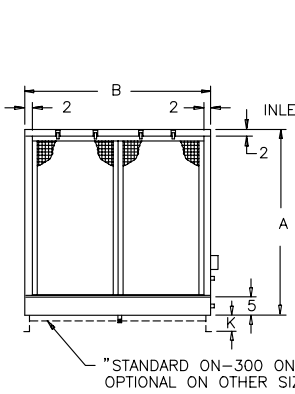
DETAIL "A"



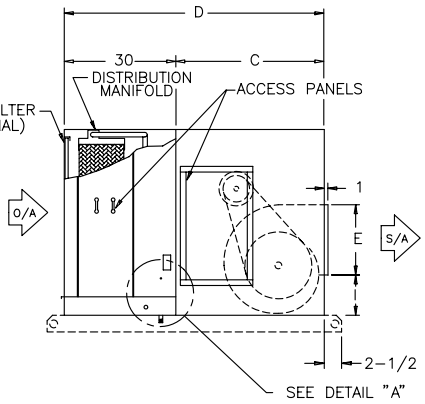
PLAN VIEW



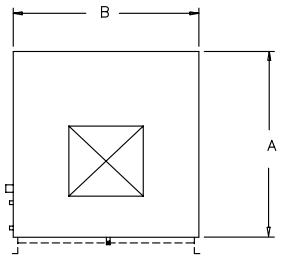
OPTIONAL FAN ARRANGEMENT



REAR VIEW



SIDE VIEW



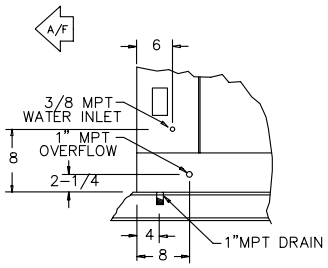
FRONT VIEW

NOTE: When using optional fan arrangements or internally isolated fan "D" dimension will = "J" plus 30".

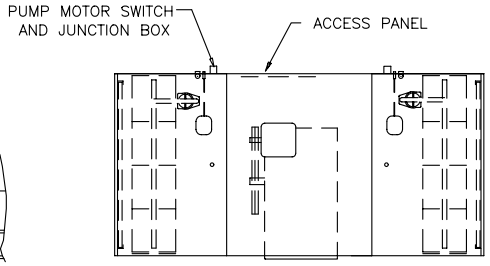
MODEL	BLOWER SIZE	EVAP. MEDIA	A	B	C	D	E	F	G	H	I	J	K	NET WT.	OPERATING WT.
HECD-70	18" FC	(4) 12 x 12 x 42-1/2 (1) 2 x 12 x 42-1/2	50	50	32	62	18-7/8	21-7/8	14-1/16	14-1/16	12-7/8	39	4	630 lbs.	890 lbs.
HECD-100	20" FC	(4) 12 x 12 x 48 (1) 8 x 12 x 48	56	56	35	65	24-3/4	24-7/8	15-9/16	15-9/16	13-1/2	44	4	805 lbs.	1069 lbs.
HECD-130	25" FC	(5) 12 x 12 x 54-1/2	62	60	42	72	31-1/4	31-3/8	14-5/16	14-5/16	15-7/8	53	4	949 lbs.	1240 lbs.
HECD-210	27" FC	(6) 12 x 12 x 67-1/2 (1) 3 x 12 x 67-1/2	75	75	50	80	34-1/4	34-3/8	20-5/16	20-5/16	17-9/16	60	4	1489 lbs.	1879 lbs.
HECD-300	33" FC	(8) 12 x 12 x 78-1/2	86	96	75	105	42-15/16	39-3/4	20	36-1/4	17-1/16	75	4	2008 lbs.	2529 lbs.

DIMENSIONS – BASIC UNIT

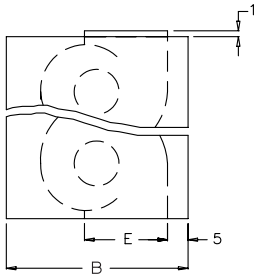
HECD-260, 340, 420, 600



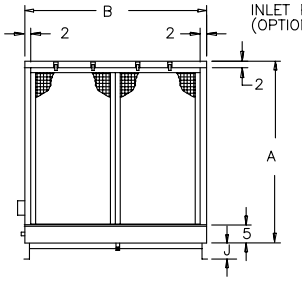
DETAIL "A"



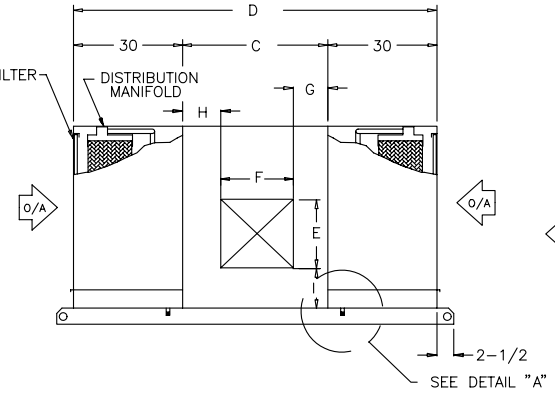
PLAN VIEW



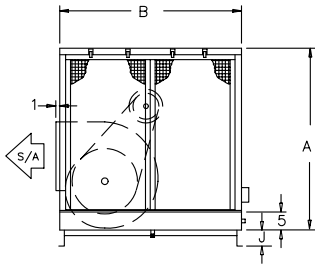
OPTIONAL FAN ARRANGEMENTS



REAR VIEW



SIDE VIEW



FRONT VIEW

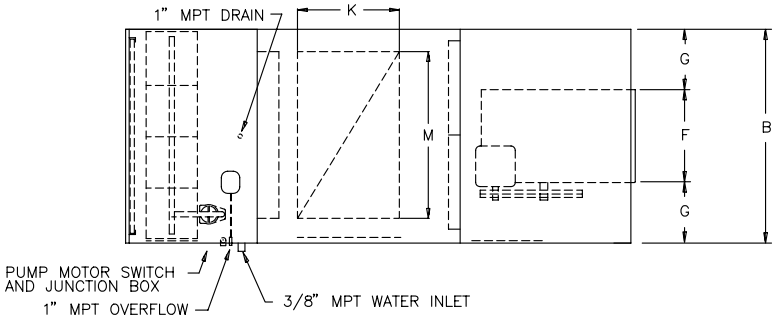
NOTE: Combination of some optional equipment may effect standard cabinet dimensions. Please contact factory for more information.

MODEL	BLOWER SIZE	EVAP. MEDIA	A	B	C*	D*	E	F	G	H	I	J	NET WT.	OPERATING WT.
HECD-260	27" FC	(10) 12 x 12 x 54-1/2	62	60	53	113	34-1/4	34-3/8	9-5/16	9-5/16	17-9/16	4	1553 lbs.	2135 lbs.
HECD-340	33" FC	(12) 12 x 12 x 67-1/2 (2) 3 x 12 x 67-1/2	75	75	96	156	42-15/16	39-7/8	20	36-1/8	17-1/16	4	2328 lbs.	3108 lbs.
HECD-420	36" FC	(12) 12 x 12 x 67-1/2 (2) 3 x 12 x 67-1/2	75	75	96	156	42-15/16	42-3/4	17	36-1/4	17-1/16	4	2453 lbs.	3233 lbs.
HECD-600	42" FC	(16) 12 x 12 x 78-1/2	86	96	129	189	44	60-1/4	30	38-3/4	36-1/2	6	3600 lbs.	4650 lbs.

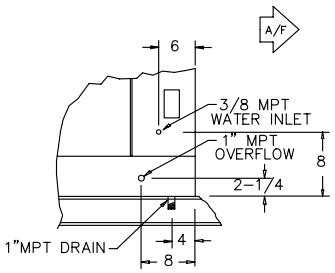
* Internally Isolated Model 260 - "C" = 75, "D" = 135

DIMENSIONS – BASIC UNIT WITH OA AND RA

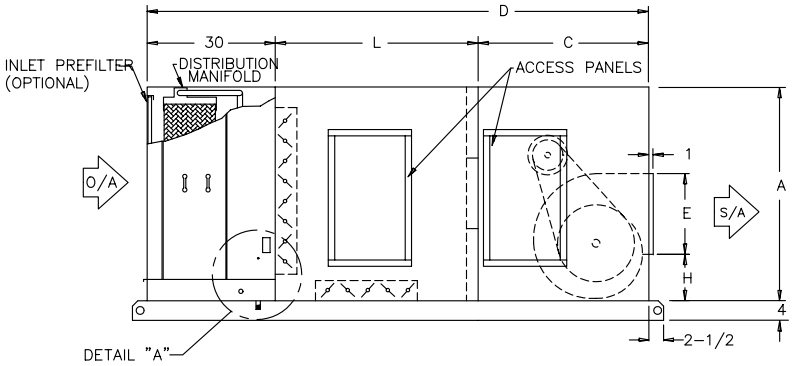
HECD-70, 100, 130, 210, 300



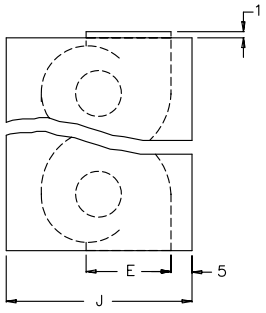
PLAN VIEW



DETAIL "A"



SIDE VIEW



OPTIONAL FAN ARRANGEMENTS

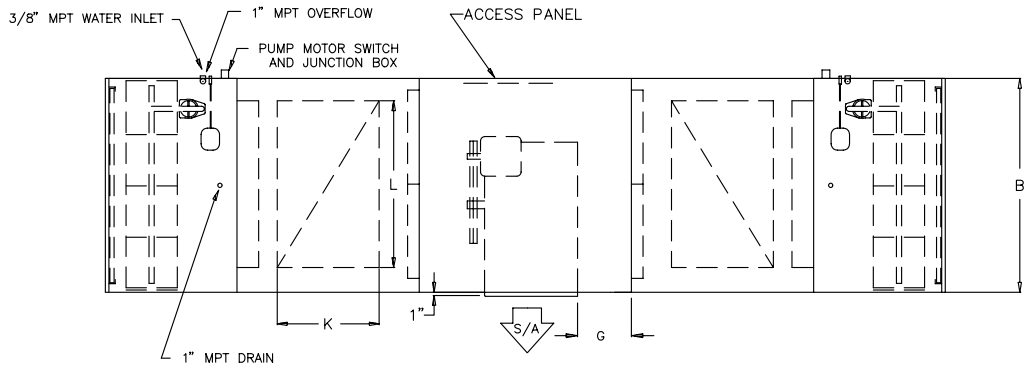
NOTE: When using internally isolated fan or optional fan arrangement use "J" dimension in place of "C" dimension.

MODEL	A	B	C	D	E	F	G	H	J	K	L	M
HECD-70	50	50	32	110	18-7/8	21-7/8	14-1/16	12-7/8	39	24	48	32
HECD-100	56	56	35	113	24-3/4	24-7/8	15-9/16	13-1/2	44	24	48	40
HECD-130	62	60	42	120	31-1/4	31-3/8	14-5/16	15-7/8	53	28	48	44
HECD-210	75	75	50	128	34-1/4	34-3/8	20-5/16	17-9/16	60	30	48	65
HECD-300	86	96	75	153	42-15/16	39-3/4	20	17-1/16	75	32	48	75

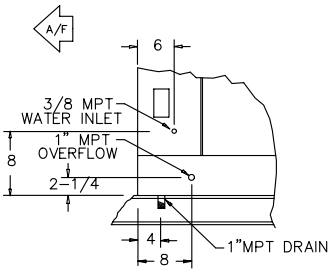
MODEL	BLOWER SIZE	EVAP. MEDIA	FILTER QTY. & SIZE	NET WT.	OPERATING WT.
HECD-70	18" FC	(4) 12 x 12 x 42-1/2 (1) 2 x 12 x 42-1/2	(6) 16 x 25 x 2	995 lbs.	1253 lbs.
HECD-100	20" FC	(4) 12 x 12 x 48 (1) 8 x 12 x 48	(6) 16 x 25 x 2	1250 lbs.	1514 lbs.
HECD-130	25" FC	(5) 12 x 12 x 54-1/2	(9) 20 x 20 x 2	1488 lbs.	1780 lbs.
HECD-210	27" FC	(6) 12 x 12 x 67-1/2 (1) 3 x 12 x 67-1/2	(6) 16 x 25 x 2 (6) 20 x 25 x 2	2269 lbs.	2659 lbs.
HECD-300	33" FC	(8) 12 x 12 x 78-1/2	(16) 20 x 24 x 2	3275 lbs.	3785 lbs.

DIMENSIONS – BASIC UNIT WITH OA AND RA

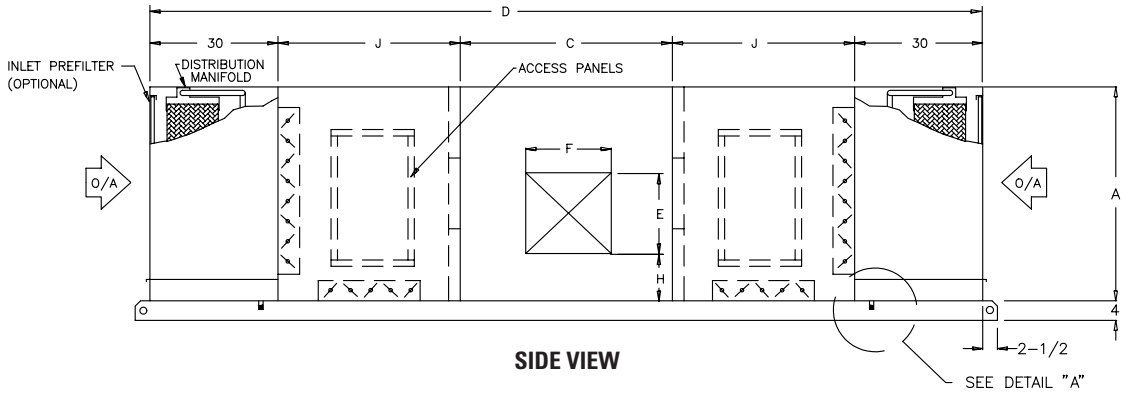
HECD-260, 340, 420, 600



PLAN VIEW



DETAIL "A"



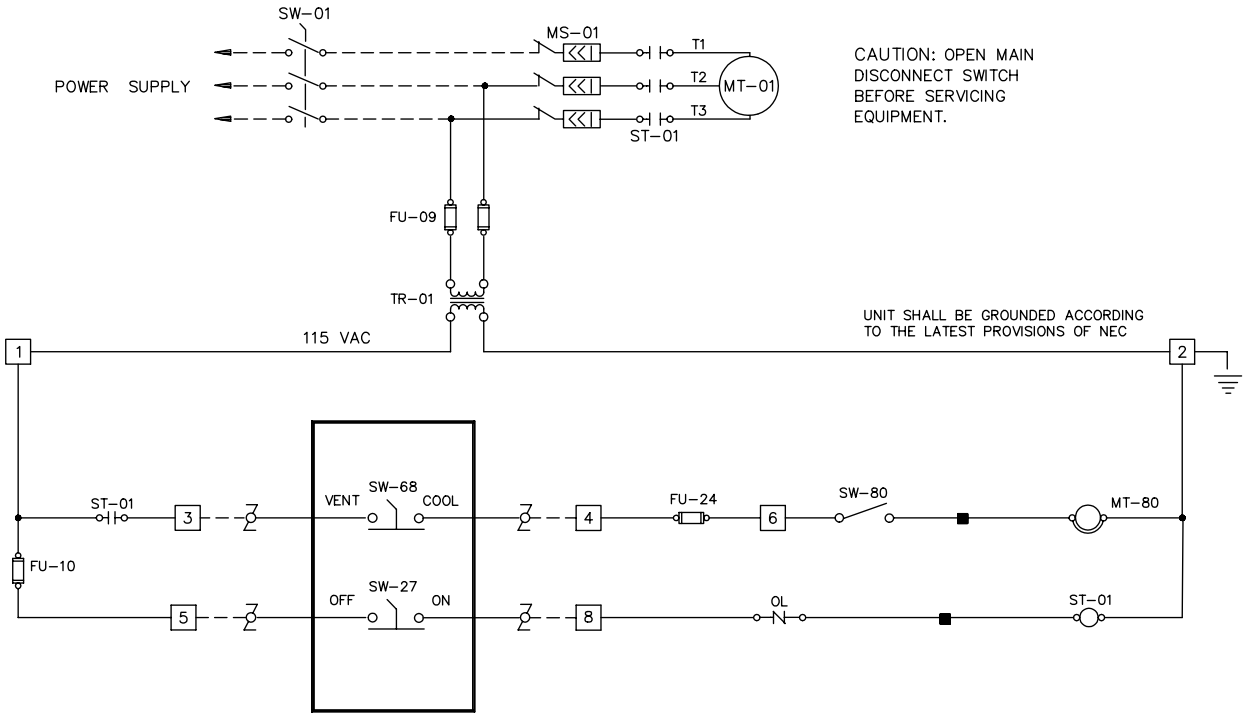
SIDE VIEW

NOTE: When using internally isolated fan on 260 size only "C" dimension = 75" & "D" dimension = 219".

MODEL	A	B	C	D	E	F	G	H	J	K	L
HECD-260	62	60	53	209	34-1/4	34-3/8	9-5/16	17-9/16	48	28	44
HECD-340	75	75	96	252	42-15/16	39-7/8	20	17-1/16	48	30	65
HECD-420	75	75	96	252	42-15/16	42-3/4	17	17-1/16	48	30	65
HECD-600	86	96	129	285	44	60-1/4	30	36-1/2	48	32	75

MODEL	BLOWER SIZE	EVAP. MEDIA	FILTER QTY. & SIZE	NET WT.	OPERATING WT.
HECD-260	27" FC	(10) 12 x 12 x 54-1/2	(18) 20 x 20 x 2	2650 lbs.	3245 lbs.
HECD-340	33" FC	(12) 12 x 12 x 67-1/2 (2) 3 x 12 x 67-1/2	(12) 16 x 25 x 2 (12) 20 x 25 x 2	4040 lbs.	4840 lbs.
HECD-420	36" FC	(12) 12 x 12 x 67-1/2 (2) 3 x 12 x 67-1/2	(12) 16 x 25 x 2 (12) 20 x 25 x 2	4215 lbs.	5015 lbs.
HECD-600	42" FC	(16) 12 x 12 x 78-1/2	(32) 20 x 25 x 2	6100 lbs.	7175 lbs.

TYPICAL WIRING DIAGRAM



NOTES

Note: Because of shipping restrictions field connections and/or wiring between components or sections may be required.

DENOTES COMPONENT TERMINAL NUMBER AND WIRING

DENOTES JUMPER WIRE

DENOTES WIRE CONNECTION

DENOTES CONTROL CABINET TERMINAL BLOCK AND WIRE NUMBER

DENOTES COMPONENTS SUPPLIED AND WIRED BY OTHERS

DENOTES WIRING BY OTHERS

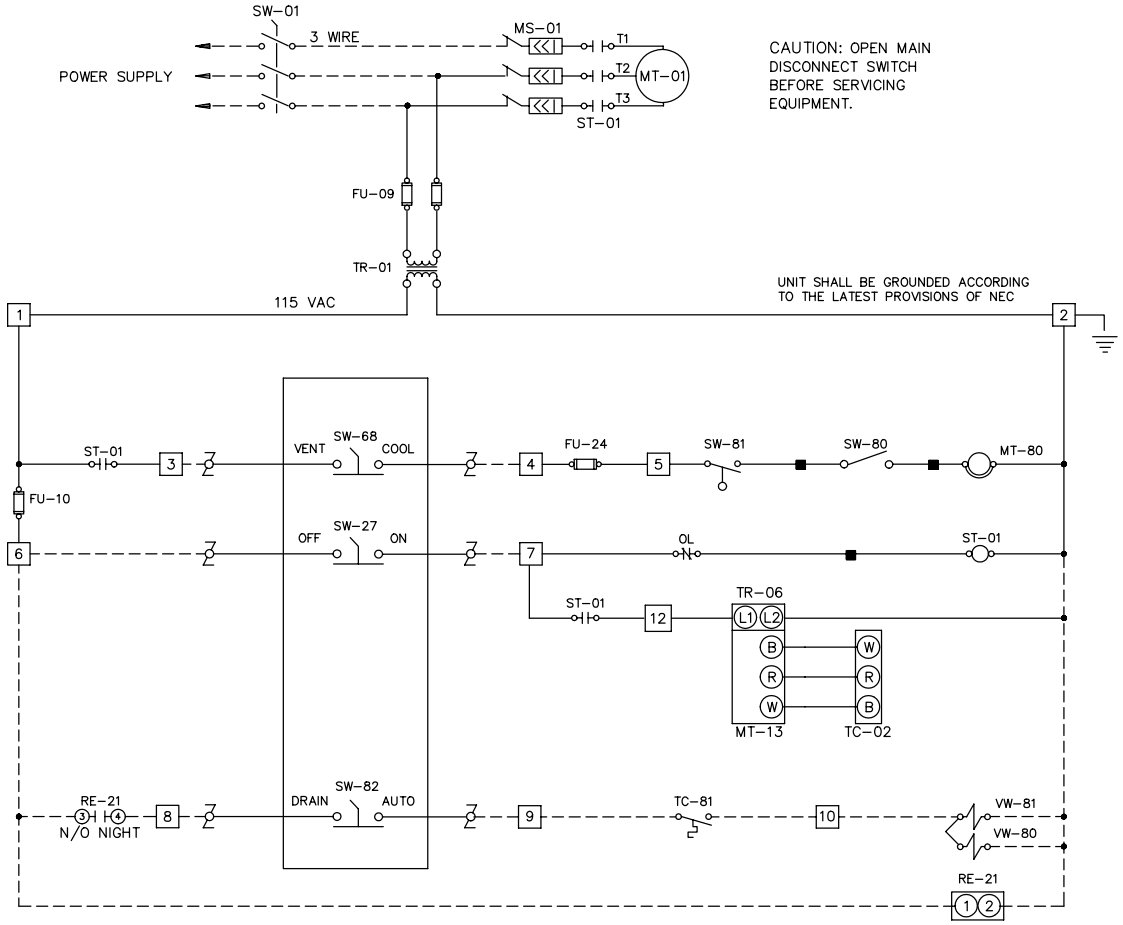
DENOTES WIRE NUMBER LEADS

1 TO 99 TERMINAL BLOCKS - 115 VOLT
101 TO 199 TERMINAL BLOCKS - 24 VOLT

COMPONENT IDENTIFICATION

FU-09	Transformer Fuse
FU-10	Control Circuit Fuse
FU-24	Evaporative Cooling Motor Fuse
MS-01	Manual Motor Protector
MT-01	Main Supply Fan Motor
MT-80	Water Pump
ST-01	Main Supply Fan Motor Starter
SW-01	Main Disconnect Switch
SW-27	Fan On-Off Switch
SW-68	Cool-Vent Switch
SW-80	Pump Switch
TR-01	Control Circuit Transformer

TYPICAL WIRING DIAGRAM



NOTES

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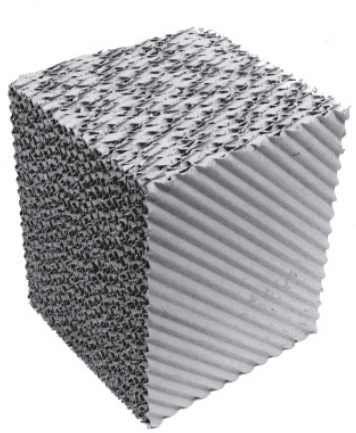
COMPONENT IDENTIFICATION

FU-09	Transformer Fuse
FU-10	Control Circuit Fuse
FU-24	Evaporative Cooling Motor Fuse
MS-01	Manual Motor Protector
MT-01	Main Supply Fan Motor
MT-13	Damper Motor
MT-80	Water Pump
RE-21	7 Day Time Clock
TC-02	Mixed Air Controller
ST-01	Main Supply Fan Motor Starter
SW-01	Main Disconnect Switch
SW-27	Fan On-Off Switch
SW-68	Cool-Vent Switch
SW-80	Pump Switch
SW-81	Water Level Cut-Off Switch
SW-82	Reservoir Drain Switch
TC-81	Freeze Protection Thermostat
TR-01	Control Circuit Transformer
TR-06	Damper Motor Transformer
VW-80	Water Drain Valve (N.O.)
VW-81	3-Way Water Supply Valve (N.C.)

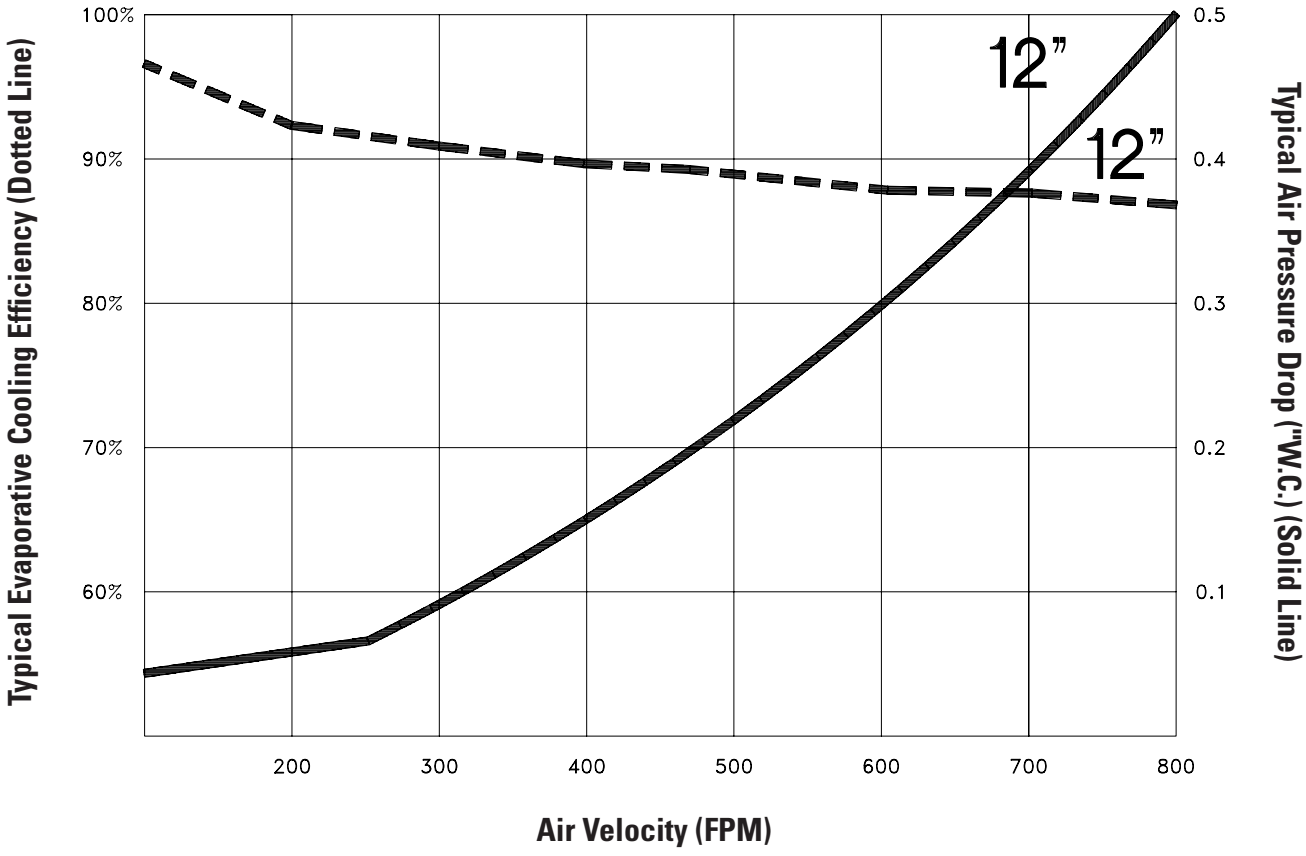
ALTON TURBO DEK

. . . is a broad name used to describe our Turbodek and Fiberdek evaporative pads. Turbodek is made from a special cellulose paper, impregnated with insoluble anti-rot salts and rigidifying saturants. Fiberdek is made from large glass fibers bound together by inorganic, noncrystalline fillers and is UL approved with a UL 900 Class 2 rating up to 12" depth.

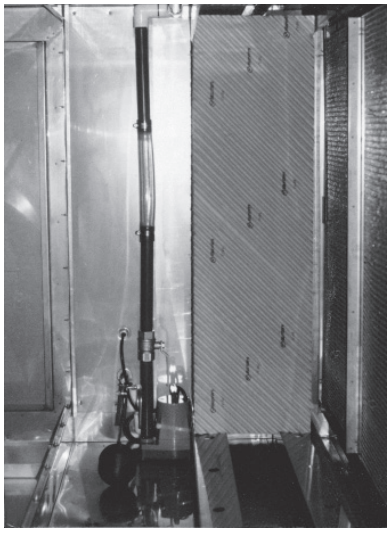


This unique crossfluted design of the pads induces highly tur bulent mixing of air and water for optimum heat and moisture transfer. The internal geometry of the pad . . . a "built-in angle". . . continually directs the water to the air entry side. This results in:

1. **Much higher cooling efficiency** – up to 90% in the 400-500 FPM velocity range in a typical 12" depth of Turbodek . . . slightly higher in Fiberdek.
2. **Much higher face velocity** – because of the "built-in angle", the maximum air velocity without water carryover is approximately 750 FPM for Turbodek. This compares to approximately 200 FPM for conventional pads!
3. **Self-cleaning design** – Turbodek pads are unaffected by atmospheric dust or sand. When the recirculating water is turned on, especially without air flow, the water flushes the surface areas, with the greatest concentration at the entering side where debris normally accumulates. This also serves as protection against mineral buildup.



FORMULAS FOR ESTIMATING

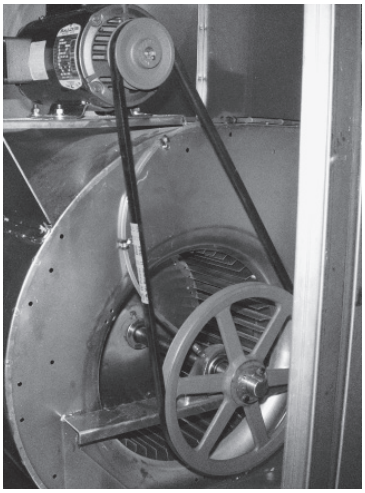


Standard washer section on an HECD.

DEFINITIONS

DRY BULB TEMPERATURE:
Atmospheric temperature as measured by a standard thermometer.

WET BULB TEMPERATURE:
Temperature recorded by thermometer with wet sock over bulb in moving air stream. A measuring instrument which has a thermometer in this arrangement is a sling psychrometer. The wet bulb temperature is the lowest temperature to which air can be cooled by evaporation.



Blower compartment access panel removed showing accessibility to blower, motor and V-belt drive.

ABBREVIATIONS

A = Filter area, sq. ft.
Em = Blower motor voltage
Ep = Pump voltage
FF = Phase factor (1 for 1∅, 1.73 for 3∅)
FPM = Feet per minute
GPH = Gallons per hour
Im = Blower motor amperage
Ip = Pump amperage
ODB = Outdoor dry bulb temp.
OWB = Outdoor wet bulb temp.
PF = Power factor
SE = Saturating effectiveness of Turbocell
TCFM = CFM rating of Turbocell

FORMULAS

Desired	Formula	Example
Leaving Air Temp. from Turbocell	ODB-SE (ODB-OWB)	95-[.87 x (95-66)] = 70°F (1)
Exhaust fan rating (2) (positive room pressure)	0.9 (TCFM)	0.9 (6000) = 5400 CFM
Exhaust fan rating (negative room pressure)	1.1 (TCFM)	1.1 (6000) = 6600 CFM
Relief Opening (3)	CFM/250	6000/250 = 24 sq. ft.
Water Evaporation	(CFM/1000) x (ODB-OWB)/10	(6000/1000) x 95-65)/10 = 18 GPH
Daily Operating Cost	$\frac{(Ip \times Ep) + (Im \times Em \times FF)}{1000}$ x PF x (HRS./DAY) x ($/KW-HR)	$\frac{(5 \times 115) + (2.5 \times 460 \times 1.73)}{1000}$ x 0.7 x 8 x $0.07 = $1.01

NOTES

(1) The 87% efficiency used in the example is the Turbocell minimum efficiency as determined by factory tests. With proper maintenance, the Turbocell high efficiencies remain constant throughout the life of the unit.

(2) Air removal is an important factor in maintaining comfort in an evaporative cooling system. Air removal will prevent an uncomfortable build-up of humidity as well as keep the air in circulation. An exhaust fan is highly recommended. In areas such as restaurant kitchens or hotel laundry rooms, where odors should remain in the room when doors are opened, the exhaust fan should be sized approximately 110% of the Turbocell rating. This will create a negative room pressure, thus causing the air movement to be into the room rather than out when the doors are opened. In other cases, such as a coin operated laundry, where it is desirable to greet customers with a cool breeze upon opening the door, the exhaust fan should be sized approximately 90% of the Turbocell rating. This will create a positive room pressure, which will cause the air movement to be out of the room when doors are opened. This will also help prevent outside air from entering .

(3) When an exhaust fan is not used, the formula will determine the free area that must be provided from open windows, doors, etc.

ENGINEERING SPECIFICATIONS

1.0 The evaporative cooling unit shall be weatherproof and self-contained. It consists of component parts as listed in the following paragraphs. Units shall be Turbocell as sold by Alton located in Dallas, Texas or approved equal.

2.0 TURBOCELL EVAPORATIVE SECTION

2.1 The Turbocell evaporative cooling section shall contain the Turbocell water system, 12" deep cell cooling media, float valve, overflow, and drain connections. Evaporative module to be built separately from the blower section, and no water is to flow into the blower compartment at any time. Evaporative and blower sections are to be firmly attached. Cabinet shall be fabricated from 304 stainless steel. The cooling media shall be easily removable through a full size access panel located on the side of the casing. The side access panel shall also permit easy access to the pump, float, water regulating and bleed-off valves.

2.2 Turbodek cooling media shall be 12" deep fluted cellulose, high efficiency evaporative media, impregnated with insoluble anti-rot chemicals. Maximum air velocity without water carryover is approximately 700 FPM.

2.3 Turbocell water system shall produce a fine spray action which uniformly saturates the 12" deep Turbodek media. Turbocell system to include a submersible pump with U.L. listed, hermetically sealed, dielectric oil-filled motor and Buna-N seal. Horsepower rating of the pump shall not be less than $^1/_6$ HP. Pump to be centrifugal type with suction strainer to prevent the intake of solid matter. Pump assembly shall discharge into a distribution manifold fabricated from heavy-duty PVC pipe with metered orifices. A water regulating valve shall be installed in the distribution manifold and will permit field adjustment of water flow over the media. A manual pet-cock metering valve shall be installed in the distribution manifold allowing continuous bleed-off, thus minimizing the build-up of minerals and salts. The Turbocell water system assembly shall be available for 115 or 230 volt single phase operation.

2.4 An adjustable brass float valve shall maintain a constant water level in the Turbocell tank.

2.5 The Turbocell evaporative cooling unit shall have a minimum saturation effectiveness of 88 percent at 700 FPM. Saturating effectiveness is defined as:

$$SE = \frac{T_1 - T_2}{T_1 - T_3} \times 100$$

Where: T1 = Outside air, dry bulb temperature, °F.
T2 = Leaving air, dry bulb temperature, °F.
T3 = Outside air, wet bulb temperature, °F.

3.0 BLOWER SECTION

3.1 The blower section shall include a fan of the centrifugal type and be complete with motor and drive equipment. The fan shall be tested in accordance with standards set forth in Standard 210 of AMCA (Air Movement and Control Association). All air ratings are based on delivery against the external static pressure specified with Turbocell system operating. Fan wheels shall have two (2) bearings, one mounted on each side of the wheel. Bearings shall be self-aligning, pillow block, ball bearing type with screw-in grease zerk fittings for relubrication. Fan shaft shall be ground and polished with key seats and keys for mounting wheel and fan pulley. Fan shall be connected to motor by means of an approved V-belt drive with grooved pulleys. Motor pulleys shall be the adjustable pitch diameter type through $7^1/_2$ HP. The motor shall be designed to suit the characteristics of the available electric service. Motor shall be mounted on a base with adjusting slots which will permit easy belt adjustment.

3.2 Blower wheels shall be the centrifugal center hub type with multiple forward curved blades and double intake.

3.3 Blower scroll housing to be welded construction. When the fan motor is located above the blower housing, a frame shall support the adjustable motor base. In no case will the motor frame rest directly on the blower housing.

3.4 Standard unit construction to have top horizontal discharge from front of cabinet, with bottom horizontal, top vertical, or bottom vertical discharge available upon request.

3.5 Blower cabinet to be fabricated from galvanized steel. A removable panel permitting access to blower motor and drive shall be provided. Access panel is to be a minimum of 16" wide by 29" high and shall include two stainless steel retainers, handle and weatherproof gasket. Blower cabinet to be rigidly constructed, corrosion-resistant, and have a primer/enamel exterior finish.

MEDIA SPECIFICATIONS		
CONDITION	**TURBODEK**	**FIBERDEK**
maximum water temp.	130°F	165°F
maximum air temp.	300°F	300°F
ph range	6-9	5-10
dry weight	2.4 lb/ft^3	4.5 lb/ft^3
wet weight	5.6 lb/ft^3	9.0 lb/ft^3
operating weight	8.0 lb/ft^3	11.4 lb/ft^3
water flow rate (gpm/sq. ft.)	1.5	1.5

Sold By:

ALTON
4830 Transport Drive, Dallas, TX 75247
Phone: 214-638-6010
FAX: 214-638-2395
A MESTEK COMPANY

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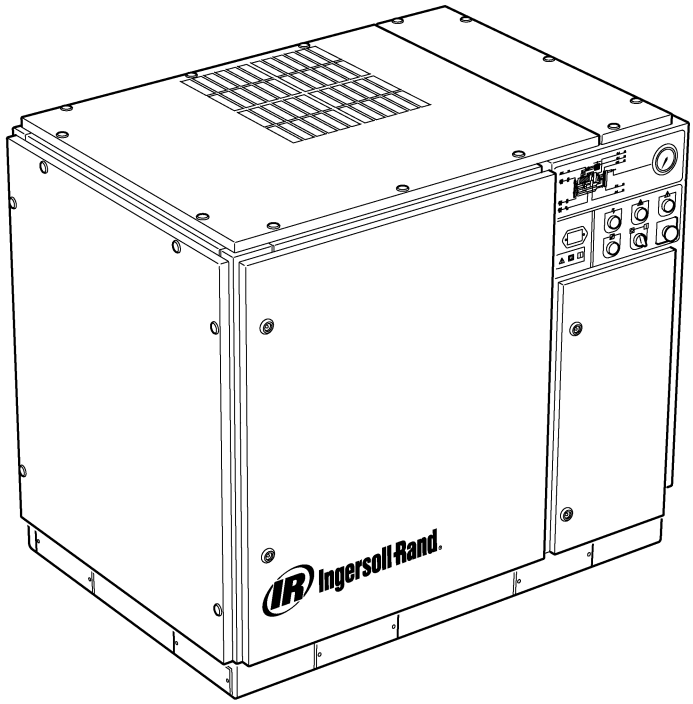
In the interest of product improvement, Alton reserves the right to make changes without notice.

Ingersoll-Rand®

UP SERIES ROTARY SCREW

INSTALLATION AND OPERATION OF THE POWER OUTAGE RESTART OPTION FOR UP SERIES UNITS WITH INTELLISYS®



Before installation and operation of this option, these instructions should be studied carefully to obtain a clear knowledge of the option and its application to the compressor.

RETAIN THIS MANUAL WITH UNIT.
This Technical manual contains IMPORTANT SAFETY DATA and should be kept with the air compressor at all times.

C.C.N. : 22201826
REV. : C
DATE : MAY 2004

CONTENTS

1	**CONTENTS**
2	**INSTALLATION**
4	**OPERATING INSTRUCTIONS**
5	**PARTS LIST**

ABBREVIATIONS & SYMBOLS

####	Contact Ingersoll–Rand for serial number
–>####	Up to Serial No.
####–>	From Serial No.
*****	Not illustrated
†	Option
NR	Not required
AR	As required
SM	Sitemaster/Sitepack
HA	High ambient machine
WC	Watercooled machine
AC	Aircooled machine
ERS	Energy recovery system
T.E.F.C.	Totally enclosed fan cooled motor (IP54)
O.D.P.	Open drip proof (motor)

cs	Czech
da	Danish
de	German
el	Greek
en	English
es	Spanish
et	Estonian
fi	Finnish
fr	French
hu	Hungarian
it	Italian
lt	Lithuanian
lv	Latvian, Lettish
mt	Maltese
nl	Dutch
no	Norwegian
pl	Polish
pt	Portuguese
sk	Slovak
sl	Slovenian
sv	Swedish
zh	Chinese

0.0 SAFETY AND WARNINGS

Refer to (Safety and Warnings) in the compressor Operators / Instruction Manual.

Shut down the compressor. Close the isolation valve. Relieve the system air pressure. Ensure that all air pressure has been relieved from the compressor and air system.

Disconnect power to the compressor before servicing. Lock and tag the main power disconnect switch in the open (off) position.

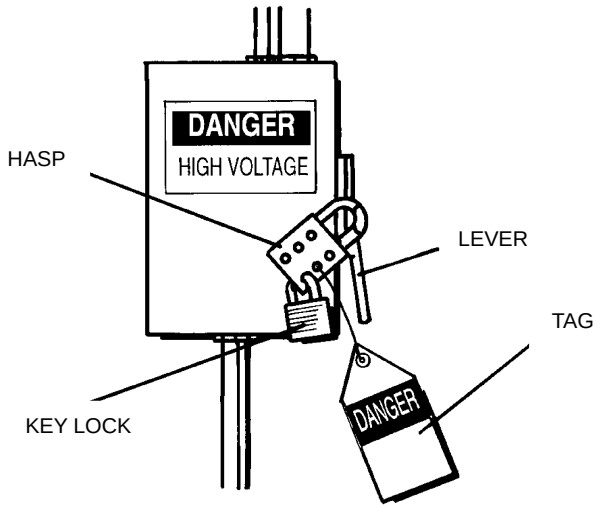


FIGURE 0.0–1 MAIN DISCONNECT LOCKED AND TAGGED

1.0 DESCRIPTION

1.1 PURPOSE

The purpose of these instructions is to identify the correct parts required when installing the Power Outage Restart Option and explain the operation of the option. If this option is furnished on the compressor from the factory, use this supplement for operation reference only.

1.2 TOOLS REQUIRED

Only what would be found in any reasonably equipped serviceman's tool box.

2.0 INSTALLATION

Power Outage Restart Option

To install Power Outage Restart Option, follow steps 1–13.

1. Remove the option module (39194097) from its packaging.

2. Insert the module into the option module socket labeled J11 on the right side of the Intellisys® controller enclosure per figure 2.0–4.

3. Drill a 7/8 inch (22mm) diameter hole in the right side of the starter enclosure at the location shown in Figure 2.0–1.

4. Press out the knock–out hole in the rear of the horn mounting box.

5. Remove the locknut (39108949) from the hub (35275494) and mount the hub on the back of the horn mounting box.

6. Install and tighten the hub locknut on the side of the mounting box.

7. Screw nipple (95934279) into the hub.

8. Install the sealing locknut (39108949) on the nipple, with the seal material away from the horn mounting box and tighten securely.

9. Insert the nipple through the hole in the side of the starter enclosure and install another locknut on the inside of the starter enclosure with the seal material facing the side of the starter enclosure. Tighten the assembly so the horn mounting box is secure.

10. Using the wire supplied in the kit, connect the horn as shown on the wiring schematic decal.

11. Install the .5" NPT plug (39146733) in the hole in the top of the horn mounting box.

12. Mount the horn on the horn mounting box that was previously mounted to the side of the starter enclosure and tighten the retaining screws.

13. Install the corresponding decal for PORO option on the front of the starter enclosure door as shown in Figure 2.0–3.

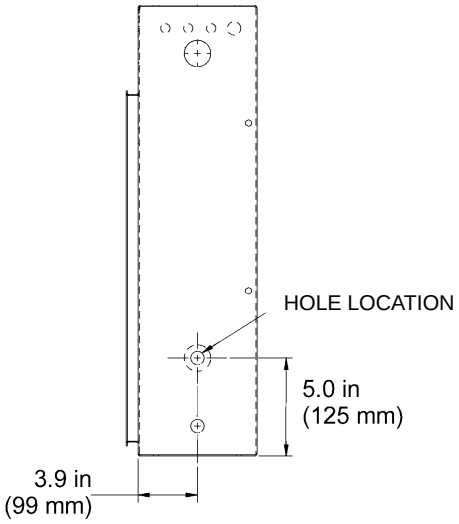


FIGURE 2.0–1 STARTER ENCLOSURE (WITH HORN MOUNTING HOLE LOCATION)

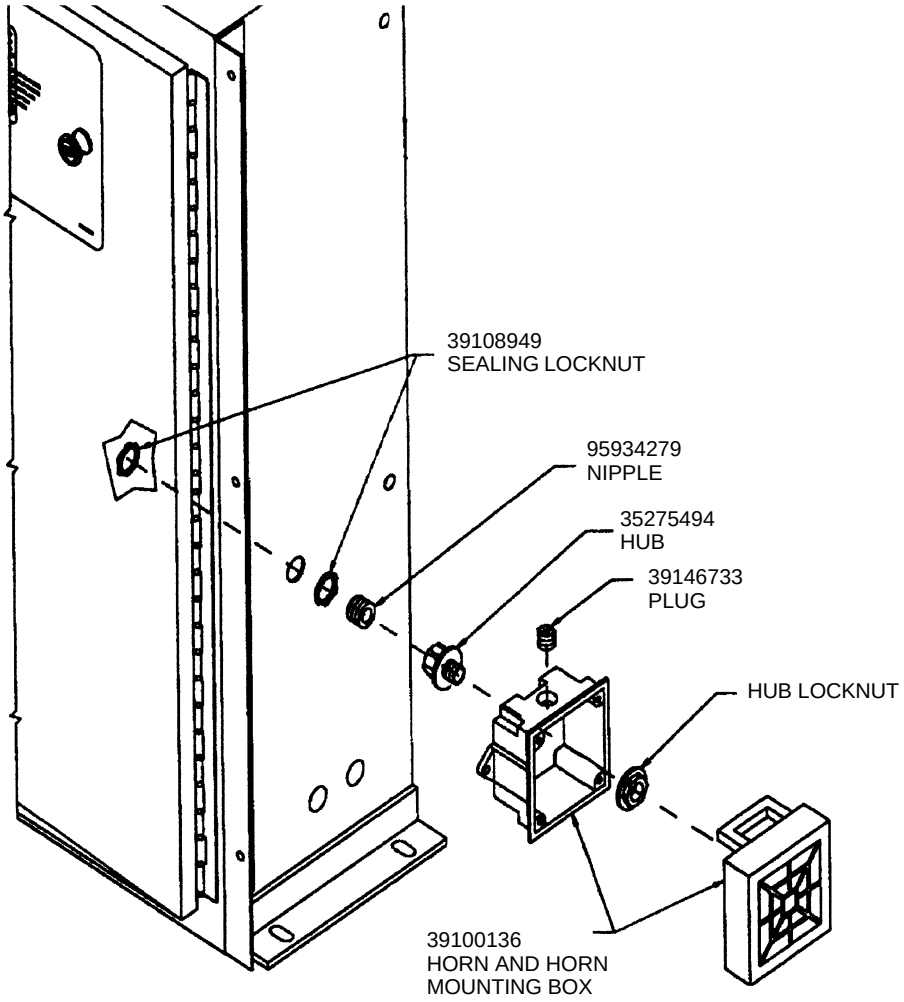


FIGURE 2.0–2 STARTER ENCLOSURE WITH HORN ASSEMBLY

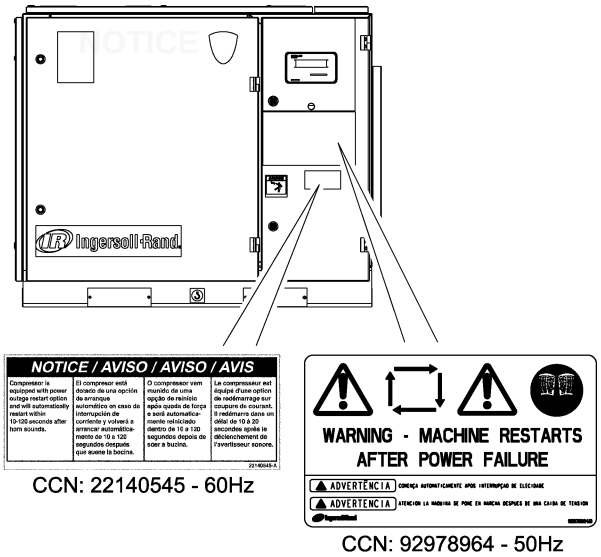


FIGURE 2.0–3 STARTER ENCLOSURE DOOR (WITH DECAL)

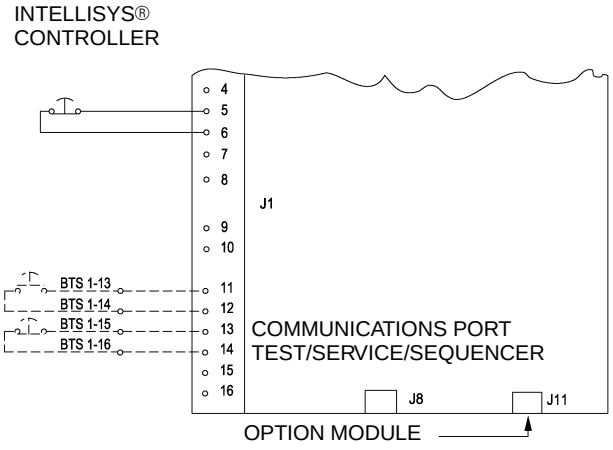


FIGURE 2.0–4 OPTION MODULE

3.0 OPERATION

3.1 POWER OUTAGE RESTART OPTION

For customers that have interruptions in their incoming power supply to the compressor and must maintain an uninterrupted supply of compressed air, the Power Outage Restart Option allows an Intellisys® compressor to restart automatically 10–120 seconds (adjustable) after incoming power is restored.

The Power Outage Restart Option is turned on by using the customer set routine on the Intellisys® controller. The restart time delay, which is adjustable from 10–120 seconds, can also be adjusted while in the set routine on the Intellisys® controller. Any time power is restored to the compressor after a power interruption and if the compressor was running when power was lost, a horn located on the side of the starter box will sound during the restart time delay (10–120 seconds), after which the compressor will automatically start. After starting, the compressor will return to the mode of operation that the compressor was in prior to the power interruption.

To operate in the power outage restart mode, proceed with following steps:

1. Power up the unit and wait for the Intellisys® display to read READY TO START.

2. Press the SET button once to enter the customer set point routine. The Set Offline Air Pressure indicator will light and the display will show the set point pressure.

3. Press and release the SET button multiple times until the message PWR OUT RSTR OFF is displayed.

4. Push the up or down arrows to change to the desired condition. ON in the display indicates Power Outage Restart is turned on and OFF in the display indicates Power Outage Restart is turned off.

5. Once the selection has been made, press SET button to put the selection into Intellisys® memory. The display will flash twice and the message will change to STR DELAY 10 Sec if the option was turned on. This message will only display if the Power Outage Restart Option is turned on.

6. Use the up or down arrows to select the desired delay time (10–120 sec.).

7. Press SET and the display will flash twice indicating the change has been made.

8. Push the DISPLAY SELECT BUTTON or wait 30 seconds for the controller to automatically exit the set routine. The display returns to READY TO START.

Function test

To test the operation of the Power Outage Restart Option:

1. Slowly open the main isolation valve.

2. Push the green START button on the Intellisys® display to start the compressor.

3. The compressor will load automatically if there is a sufficient demand for air. Allow the compressor to load.

4. Open the main disconnect to remove power from the compressor.

5. Close the main disconnect to reapply power to the compressor.The horn will sound and the Intellisys® display will read START IN ___SEC.The display will count down the time until the compressor starts automatically and the horn stops. After starting, the compressor will automatically return to the same mode of operation as prior to the power interruption.

Fault Analysis

1. If the Intellisys® display indicates the count down message and the horn does not sound, check the wiring of the horn.

2. If the Intellisys® display does not indicate the count down message, the horn does not sound and the unit does not restart automatically, verify that the Option has been turned on.

4.0 PARTS LIST

PARTS LIST FOR POWER OUTAGE RESTART OPTION (P/N 22060032)

ITEM	PART NUMBER	QUANTITY	DESCRIPTION
1	39100136	1	Horn, Weather Resistant
2	35275494	1	Hub
3	95934279	1	$^1/_2$" N.P.T. Nipple
4	39108949	2	$^1/_2$" Sealing Locknut
5	39146733	1	$^1/_2$" N.P.T. Plug
*6	39194097	1	Power Outage Restart Option
7	39129085	3ft. (91cm)	Wire, Red 16 Ga
8	39146790	3ft. (91cm)	Wire, Green 16 Ga
9	22201826	1	Instructions
10	22140545	1	Decal, 4 language
11	92978964	1	Decal, ISO

* ITEM NOT SOLD SEPARATELY. FOR REPLACEMENT PART, ORDER KIT No.39694179

Ingersoll Rand

Americas

4-37kW / 5-50hp

Model	Frequency (Hz)	Rated Pressure (barg / psig)	Nominal Power (kW / hp)	Flow (m3min / cfm)	Length (cm / in)	Width (cm / in)	Height (cm / in)	Weight (kg / lbs)
UP5 4-8	50	8 / 145	4 / 5	0.55 / 19.5	104 / 41	73 / 29	91 / 36	295 / 650
UP5 4-10	50	10 / 145	4 / 5	0.45 /16	104 / 41	73 / 29	91 / 36	295 / 650
UP5 5-8	50	8 / 115	5.5 / 7.5	0.82 / 29	104 / 41	73 / 29	91 / 36	295 / 650
UP5 5-10	50	10 / 145	5.5 / 7.5	0.71 / 26	104 / 41	73 / 29	91 / 36	295 / 650
UP5 5-14	50	14.5 / 210	5.5 / 7.5	0.51 / 18	104 / 41	73 / 29	91 / 36	295 / 650
UP5 7-8	50	8 / 115	7.5 / 10	1.08 / 38	104 / 41	73 / 29	91 / 36	295 / 650
UP5 7-10	50	10 / 145	14.5 / 210	7.5 / 10	104 / 41	73 / 29	91 / 36	295 / 650
UP5 7-14	50	14.5 / 210	7.5 / 10	0.68 / 24	104 / 41	73 / 29	91 / 36	295 / 650
UP5 11c-8	50	8 / 115	11 / 15	1.60 / 56.5	104 / 41	73 / 29	91 / 36	295 / 650
UP5 11c-10	50	10 / 145	11 / 15	1.42 / 50	104 / 41	73 / 29	91 / 36	295 / 650
UP5 11c-14	50	14.5 / 210	11 / 15	1.08 / 38	104 / 41	73 / 29	91 / 36	295 / 650
UP5 11-7	50	7 / 100	11 / 15	1.84 / 65	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 11-8	50	8 / 115	11 / 15	1.70 / 60	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 11-10	50	10 / 145	11 / 15	1.54 / 54	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 15-7	50	7 / 100	15 / 20	2.41 / 85	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 15-8	50	8 / 115	15 / 20	2.36 / 83	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 15-10	50	10 / 145	15 / 20	2.07 / 73	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 15-14	50	14 / 210	15 / 20	1.61 / 57	128 / 51	92 / 36	105 / 41	509 / 1122
UP5 18-7	50	7 / 100	18.5 / 25	3.00 / 106	128 / 51	92 / 36	105 / 41	532 / 1173
UP5 18-8	50	8 / 115	18.5 / 25	2.87 / 101	128 / 51	92 / 36	105 / 41	532 / 1173
UP5 18-10	50	10 / 145	18.5 / 25	2.61 / 92	128 / 51	92 / 36	105 / 41	532 / 1173
UP5 18-14	50	14 / 210	18.5 / 25	2.01 / 71	128 / 51	92 / 36	105 / 41	532 / 1173
UP5 22-7	50	7 / 100	22 / 30	3.54 / 125	128 / 51	92 / 36	105 / 41	540 / 1190
UP5 22-8	50	8 / 115	22 / 30	3.34 / 118	128 / 51	92 / 36	105 / 41	540 / 1190
UP5 22-10	50	10 / 145	22 / 30	3.11 / 110	128 / 51	92 / 36	105 / 41	540 / 1190
UP5 22-14	50	14 / 210	22 / 30	2.32 / 82	128 / 51	92 / 36	105 / 41	540 / 1190
UP5 22E-7	50	7 / 100	22 / 30	3.95 / 140	171 / 67	138 / 54	134 / 53	992 / 2187
UP5 22E-8	50	8 / 115	22 / 30	3.70 / 131	171 / 67	138 / 54	134 / 53	992 / 2187
UP5 22E-10	50	10 / 145	22 / 30	3.35 / 118	171 / 67	138 / 54	134 / 53	992 / 2187
UP5 22E-14	50	14 / 210	22 / 30	2.75 / 97	171 / 67	138 / 54	134 / 53	992 / 2187
UP5 30-7	50	7 / 100	30 / 40	5.40 / 191	171 / 67	138 / 54	134 / 53	1028 / 2266
UP5 30-8	50	8 / 115	30 / 40	5.10 / 180	171 / 67	138 / 54	134 / 53	1028 / 2266
UP5 30-10	50	10 / 145	30 / 40	4.80 / 169	171 / 67	138 / 54	134 / 53	1028 / 2266
UP5 30-14	50	14 / 210	30 / 40	3.90 / 138	171 / 67	138 / 54	134 / 53	1028 / 2266
UP5 37PE-7	50	7 / 100	37 / 50	6.02 / 212	171 / 67	138 / 54	134 / 53	1064 / 2345
UP5 37PE-8	50	8 / 115	37 / 50	5.89 / 208	171 / 67	138 / 54	134 / 53	1064 / 2345
UP5 37PE-10	50	10 / 145	37 / 50	5.70 / 201	171 / 67	138 / 54	134 / 53	1064 / 2345
UP5 37PE-14	50	14 / 210	37 / 50	4.73 / 167	171 / 67	138 / 54	134 / 53	1064 / 2345
UP6 5-125	60	8.5 / 125	4 / 5	0.52 / 18.5	104 / 41	73 / 29	91 / 36	295 / 650
UP6 5-150	60	10.5 / 150	4 / 5	0.45 / 16	104 / 41	73 / 29	91 / 36	295 / 650
UP6 7-125	60	8.5 / 125	5.5 / 7.5	0.79 / 28	104 / 41	73 / 29	91 / 36	295 / 650
UP6 7-150	60	10.5 / 150	5.5 / 7.5	0.70 / 25	104 / 41	73 / 29	91 / 36	295 / 650
UP6 7-210	60	14.5 / 210	5.5 / 7.5	0.50 / 17.5	104 / 41	73 / 29	91 / 36	295 / 650
UP6 10-125	60	8.5 / 125	7.5 / 10	1.08 / 38	104 / 41	73 / 29	91 / 36	295 / 650
UP6 10-150	60	8.5 / 125	7.5 / 10	0.96 / 34	104 / 41	73 / 29	91 / 36	295 / 650
UP6 10-210	60	14.5 / 210	7.5 / 10	0.68 / 24	104 / 41	73 / 29	91 / 36	295 / 650
UP6 15c-125	60	8.5 / 125	11 / 15	1.55 / 55	104 / 41	73 / 29	91 / 36	295 / 650
UP6 15c-150	60	10.5 / 150	11 / 15	1.42 / 50	104 / 41	73 / 29	91 / 36	295 / 650
UP6 15c-210	60	14.5 / 210	11 / 15	1.08 / 38	104 / 41	73 / 29	91 / 36	295 / 650
UP6 15-125	60	8.5 / 125	11 / 15	1.84 / 65	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 15-150	60	10.5 / 150	11 / 15	1.64 / 58	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 20-125	60	8.5 / 125	15 / 20	2.35 / 83	128 / 51	92 / 36	105 / 41	509 / 1122

	Frequency (Hz)	Rated Pressure (barg / psig)	Nominal Power (kW / hp)	Flow (m3min / cfm)	Length (cm / in)	Width (cm / in)	Height (cm / in)	Weight (kg / lbs)
UP6 20-150	60	10.5 / 150	15 / 20	2.12 / 75	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 20-200	60	14 / 200	15 / 20	1.64 / 58	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 25-125	60	8.5 / 125	18.5 / 25	2.89 / 102	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 25-150	60	10.5 / 150	18.5 / 25	2.61 / 92	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 25-200	60	14 / 200	18.5 / 25	2.12 / 75	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 30-125	60	8.5 / 125	22 / 30	3.54 / 125	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 30-150	60	10.5 / 150	22 / 30	3.17 / 112	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 30-200	60	14 / 200	22 / 30	2.61 / 92	128 / 51	92 / 36	105 / 41	509 / 1122
UP6 40-115	60	8 / 115	30 / 40	5.32 / 188	171 / 67	138 / 54	134 / 53	1028 / 2266
UP6 40-125	60	8.5 / 125	30 / 40	5.24 / 185	171 / 67	138 / 54	134 / 53	1028 / 2266
UP6 40-150	60	10.5 / 150	30 / 40	4.81 / 170	171 / 67	138 / 54	134 / 53	1028 / 2266
UP6 40-200	60	14 / 200	30 / 40	4.05 / 143	171 / 67	138 / 54	134 / 53	1028 / 2266
UP6 50PE-115	60	8 / 115	37 / 50	6.02 / 212	171 / 67	138 / 54	134 / 53	1064 / 2345
UP6 50PE-125	60	8.5 / 125	37 / 50	5.89 / 208	171 / 67	138 / 54	134 / 53	1064 / 2345
UP6 50PE-150	60	10.5 / 150	37 / 50	5.70 / 201	171 / 67	138 / 54	134 / 53	1064 / 2345
UP6 50PE-200	60	14 / 200	37 / 50	4.73 / 167	171 / 67	138 / 54	134 / 53	1064 / 2345
UP5 4TAS-8	50	7.3 / 115	4 / 5	0.55 / 19.5	104 / 41	73 / 29	91 / 36	330 / 725
UP5 4TAS-10	50	9.3 / 145	4 / 4	0.45 / 16	104 / 41	73 / 29	91 / 36	330 / 725
UP5 5TAS-8	50	7.3 / 115	5.5 / 7.5	0.82 / 29	104 / 41	73 / 29	91 / 36	330 / 725
UP5 5TAS-10	50	9.3 / 145	5.5 / 7.5	0.74 / 26	104 / 41	73 / 29	91 / 36	330 / 725
UP5 5TAS-14	50	13.8 / 210	5.5 / 7.5	0.51 / 18	104 / 41	73 / 29	91 / 36	330 / 725
UP5 7TAS-8	50	7.3 / 115	7.5 / 10	1.08 / 38	104 / 41	73 / 29	91 / 36	330 / 725
UP5 7TAS-10	50	9.3 / 145	7.5 / 10	0.96 / 34	104 / 41	73 / 29	91 / 36	330 / 725
UP5 7TAS-14	50	13.8 / 210	7.5 / 10	0.68 / 24	104 / 41	73 / 29	91 / 36	330 / 725
UP5 11cTAS-8	50	7.3 / 115	11 / 15	160 / 56.5	104 / 41	73 / 29	91 / 36	330 / 725
UP5 11cTAS-10	50	9.3 / 145	11 / 15	1.42 / 50	104 / 41	73 / 29	91 / 36	330 / 725
UP5 11cTAS-14	50	13.8 / 210	11 / 15	1.08 / 38	104 / 41	73 / 29	91 / 36	330 / 725
UP5 11TAS-7	50	7.5 / 100	11 / 15	1.84 / 65	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 11TAS-8	50	8.15 / 115	11 / 15	1.70 / 60	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 11TAS-10	50	9.65 / 145	11 / 15	1.54 / 54	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 15TAS-7	50	7.15 / 100	15 / 20	2.41 / 85	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 15TAS-8	50	8.15 / 115	15 / 20	2.36 / 83	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 15TAS-10	50	9.65 / 145	15 / 20	2.07 / 73	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 15TAS-14	50	13.65 / 210	15 / 20	1.61 / 57	170 / 67	92 / 36	105 / 41	611 / 1347
UP5 18TAS-7	50	7.15 / 100	18.5 / 25	3.00 / 106	170 / 67	92 / 36	105 / 41	643 / 1417
UP5 18TAS-8	50	8.15 / 115	18.5 / 25	2.87 / 101	170 / 67	92 / 36	105 / 41	643 / 1417
UP5 18TAS-10	50	9.65 / 145	18.5 / 25	2.61 / 92	170 / 67	92 / 36	105 / 41	643 / 1417
UP5 18TAS-14	50	13.65 / 210	18.5 / 25	2.01 / 71	170 / 67	92 / 36	105 / 41	643 / 1417
UP5 22TAS-7	50	7.15 / 100	22 / 30	3.54 / 125	170 / 67	92 / 36	105 / 41	651 / 1435
UP5 22TAS-8	50	8.15 / 115	22 / 30	3.34 / 118	170 / 67	92 / 36	105 / 41	651 / 1435
UP5 22TAS-10	50	9.65 / 145	22 / 30	3.11 / 110	170 / 67	92 / 36	105 / 41	651 / 1435
UP5 22TAS-14	50	13.65 / 210	22 / 30	2.32 / 82	170 / 67	92 / 36	105 / 41	651 / 1435
UP5 22ETAS-7	50	7.3 / 100	22 / 30	3.95 / 140	171 / 67	138 / 54	134 / 53	1106 / 2438
UP5 22ETAS-8	50	8.3 / 115	22 / 30	3.70 / 131	171 / 67	138 / 54	134 / 53	1106 / 2438
UP5 22ETAS-10	50	9.8 / 145	22 / 30	3.35 / 118	171 / 67	138 / 54	134 / 53	1106 / 2438
UP5 22ETAS-14	50	N/A / 210	22 / 30	2.75 / 97	171 / 67	138 / 54	134 / 53	1106 / 2438
UP5 30TAS-7	50	7.3 / 100	30 / 40	5.40 / 191	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 30TAS-8	50	8.3 / 115	30 / 40	5.10 / 180	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 30TAS-10	50	9.8 / 145	30 / 40	4.80 / 169	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 30TAS-14	50	N/A / 210	30 / 40	3.90 / 138	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 37PETAS-7	50	7.2 / 100	37 / 50	6.02 / 212	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 37PETAS-8	50	8.2 / 115	37 / 50	5.89 / 208	171 / 67	138 / 54	134 / 53	1142 / 2518
UP5 37PETAS-10	50	9.8 / 145	37 / 50	5.70 / 201	171 / 67	138 / 54	134 / 53	1178 / 2597
UP5 37PETAS-14	50	N/A / 210	37 / 50	4.73 / 167	171 / 67	138 / 54	134 / 53	1178 / 2597
UP6 5TAS-125	60	8 / 115	4 / 5	0.52 / 18.5	104 / 41	73 / 29	91 / 36	330 / 725
UP6 5TAS-150	60	10 / 140	4 / 5	0.45 / 16	104 / 41	104 / 41	91 / 36	330 / 725
UP6 7TAS-125	60	8 / 115	5.5 / 7.5	0.79 / 28	104 / 41	104 / 41	91 / 36	330 / 725
UP6 7TAS-150	60	10 / 140	5.5 / 7.5	0.25 / 25	104 / 41	104 / 41	91 / 36	330 / 725
UP6 7TAS-210	60	14 / 200	5.5 / 7.5	0.5 / 17.5	104 / 41	73 / 29	91 / 36	330 / 725

	Frequency (Hz)	Rated Pressure (barg / psig)	Nominal Power (kW / hp)	Flow (m3min / cfm)	Length (cm / in)	Width (cm / in)	Height (cm / in)	Weight (kg / lbs)
UP6 7TAS-210	60	14 / 200	5.5 / 7.5	0.5 / 17.5	104 / 41	73 / 29	91 / 36	330 / 725
UP6 10TAS-125	60	8 / 115	7.5 / 10	1.08 / 38	104 / 41	73 / 29	91 / 36	330 / 725
UP6 10TAS-150	60	10 / 140	7.5 / 10	0.94 / 34	104 / 41	73 / 29	91 / 36	330 / 725
UP6 10TAS-210	60	14 / 200	7.5 / 10	0.68 / 24	104 / 41	73 / 29	91 / 36	330 / 725
UP6 15cTAS-125	60	8 / 115	11 / 15	1.55 / 55	104 / 41	73 / 29	91 / 36	330 / 725
UP6 15cTAS-150	60	10 / 140	11 / 15	1.42 / 50	104 / 41	73 / 29	91 / 36	330 / 725
UP6 15cTAS-210	60	14 / 200	11 / 15	1.08 / 38	104 / 41	73 / 29	91 / 36	330 / 725
UP6 15TAS-125	60	8.3 / 120	11 / 15	1.84 / 65	170 / 67	92 / 36	105 / 41	611 / 1347
UP6 15TAS-150	60	9.8 / 145	11 / 15	1.64 / 58	170 / 67	92 / 36	105 / 41	611 / 1347
UP6 20TAS-125	60	8.3 / 120	15 / 20	2.35 / 83	170 / 67	92 / 36	105 / 41	611 / 1347
UP6 20TAS-150	60	9.8 / 145	15 / 20	2.12 / 75	170 / 67	92 / 36	105 / 41	611 / 1347
UP6 20TAS-200	60	13.5 / 195	15 / 20	1.64 / 58	170 / 67	92 / 36	105 / 41	611 / 1347
UP6 25TAS-125	60	8.3 / 120	18.5 / 25	2.89 / 102	170 / 67	92 / 36	105 / 41	643 / 1417
UP6 25TAS-150	60	9.8 / 145	18.5 / 25	2.61 / 92	170 / 67	92 / 36	105 / 41	643 / 1417
UP6 25TAS-200	60	13.5 / 195	18.5 / 25	2.12 / 75	170 / 67	92 / 36	105 / 41	643 / 1417
UP6 30TAS-125	60	8.3 / 120	22 / 30	3.54 / 125	170 / 67	92 / 36	105 / 41	643 / 1417
UP6 30TAS-150	60	9.8 / 145	22 / 30	3.17 / 112	170 / 67	92 / 36	105 / 41	1106 / 2438
UP6 30TAS-200	60	13.5 / 195	22 / 30	2.61/ 92	170 / 67	92 / 36	105 / 41	1106 / 2438
UP6 40TAS-115	60	7.7 / 112	30 / 40	5.32 / 188	171 / 67	138 / 54	134 / 53	1142 / 2518
UP6 40TAS-125	60	8.3 / 120	30 / 40	5.24 / 185	171 / 67	138 / 54	134 / 53	1142 / 2518
UP6 40TAS-150	60	9.8 / 145	30 / 40	4.81 / 180	171 / 67	138 / 54	134 / 53	1142 / 2518
UP6 40TAS-200	60	13.5 / 195	30 / 40	4.05 / 143	171 / 67	138 / 54	134 / 53	1142 / 2518
UP6 50PETAS-115	60	7.7 / 112	37 / 50	6.02 / 212	171 / 67	138 / 54	134 / 53	1178 / 2597
UP6 50PETAS-125	60	8.3 / 120	37 / 50	5.89 / 208	171 / 67	138 / 54	134 / 53	1178 / 2597
UP6 50PETAS-150	60	9.8 / 145	37 / 50	5.7 / 201	171 / 67	138 / 54	134 / 53	1178 / 2597
UP6 50PETAS-200	60	13.5 / 195	37 / 50	4.73 / 167	171 / 67	138 / 54	134 / 53	1178 / 2597

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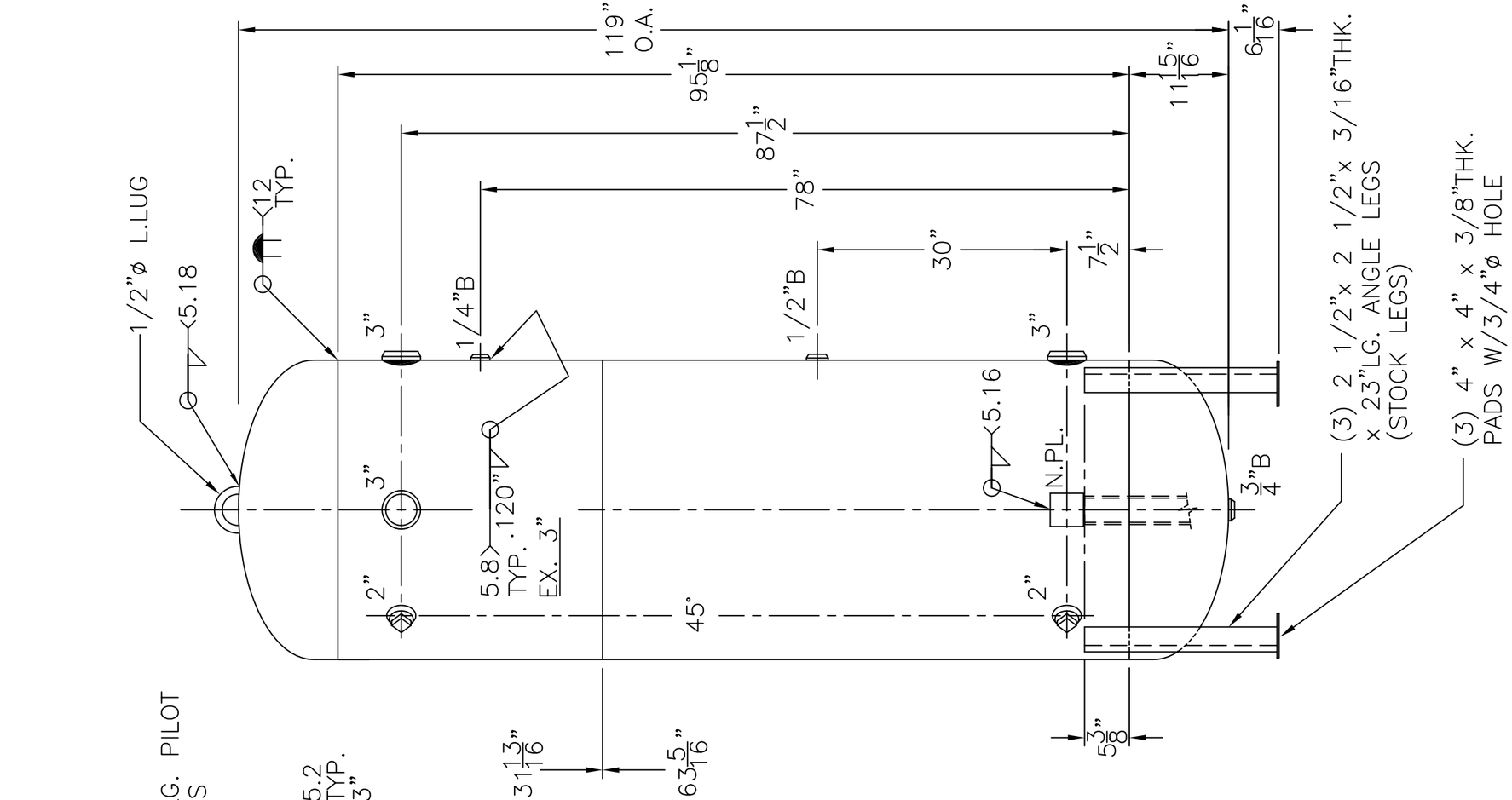

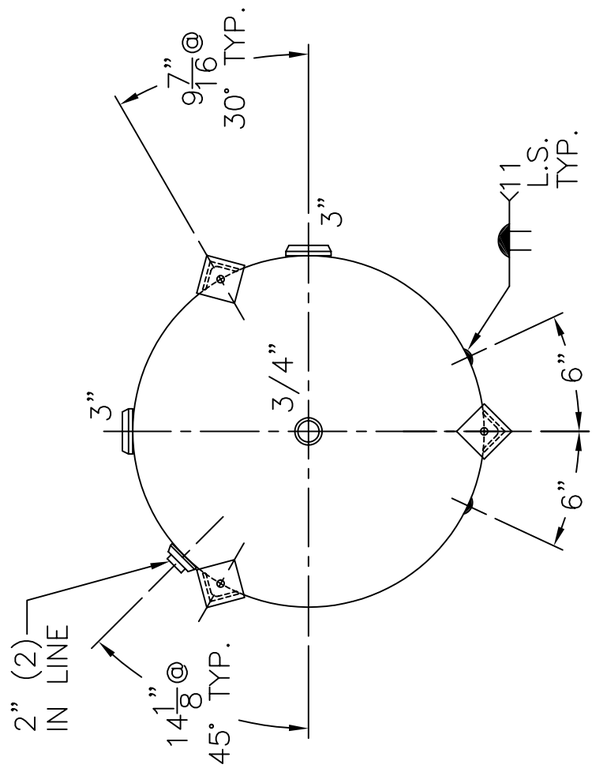

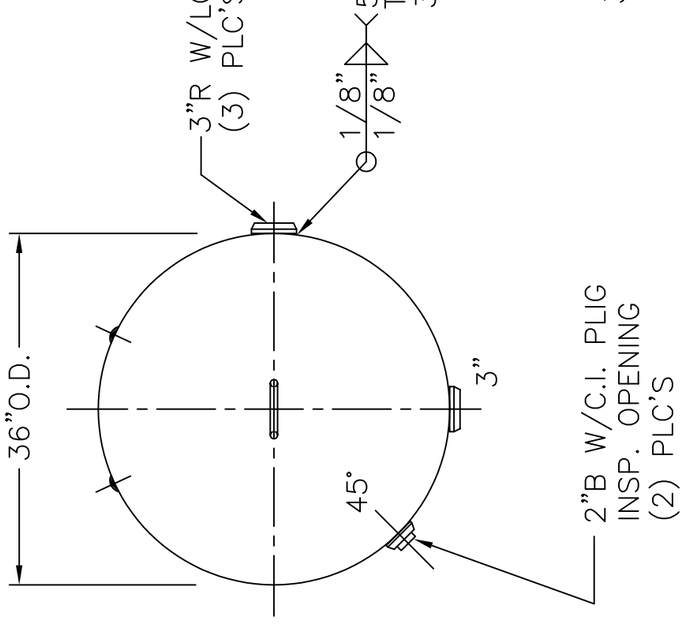

NOTE: 1) HYDRO @ 216 PSIG. MIN.

SHELL / HEADS	.182" SA-455 2:1 S.E.	36-VM-500-L	REV. 9-21-05
	JOGGLE		DATE: 1-17-84
		FOR: HANSON STANDARD	
		VERT. AIR TANK	
	.164" SA-414-G		
		INSIDE: UNPAINTED	
M.A.W.P.	165 PSIG. @ 400 °F		
M.D.M.T.	-20 °F @ 165 PSIG.	OUTSIDE: PRIME	
ASME. SECTION VIII	DIV. 1, 2004 ADD 2004	CAD "B" SIZE UNDER "STD"-SERIES	
X-RAY:	RT-4 SPOT L.S. ONLY	BY: J.G.	SCALE:3/4"=12"
GALLONS: 500	WT. 716 LBS.	ROY E. HANSON JR. MFG.	
SERIAL NO.		1924 COMPTON AVE. LOS ANGELES, CA 90011	
N.B.			